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Editorial Board

FIRST INTERNATIONAL WORKSHOP ON LASER SURGERY IN ENT, SEPTEMBER 24 - 25, 1999 ANTWERP (BELGIUM).

Brief Communique of the Workshop Chairmen

Over the last 20 years we gained an extensive experience with the C02-laser in the Antwerp Middelheim hospital. Hence we decided to share our knowledge together with specialists worldwide.

One hundred participants attended the workshop. Several personalities from all over the world gave their lectures in this extra-ordinary meeting.

An interesting communication was provoked between participants and speakers such as Prof. Abitbol, Prof. Baatenburg de Jong, Dr. Claros, Dr. Eloy, Mr. Hamilton, Prof. Jovanovic, Dr. Kamami, Prof. Klimek, Prof. Kujawski, Prof. Mahieu, Prof Mosges, Prof. Oswal, Prof Plouzhnikov, Prof. Remacle, Prof. Steiner, Prof. Van de Heyning, Dr. Van Laer, Dr. Van Opstal, Prof. Wellens, Prof. Zeitels.

Some of them provided us with the reprints of their talks, so we are able to publish an important part of the workshop,

We still continue the laserwork. In 1999 we acquired a swiftlase Sharplan C02-laser with which we are able to treat the soft palate for snoring (LAUP procedure) and Partial Inferior Turbinectomies.

We hope that friendships built up during this short period in the beautiful town of Antwerp, will grow and produce new contacts and possibilities in future.

Antwerpen, May 2001

Prof. Dr. B. Schmelzer **Prof. M. Plouzhnikov** **Dr. G. Vidts**

MICRO-ENDOSCOPIC CO_2-LASER MYOTOMY IN THE TREATMENT OF THE HYPOPHARYNGEAL (ZENKER'S) DIVERTICULUM

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INTRODUCTION

In 1764 Abraham Ludlow presented a case of regurgitation and fatal dysphagia in a 60 year old patient. Autopsy showed a large hypopharyngeal diverticulum extending into the thoracic cavity (1).

In 1877 the clinical features were described by Zenker (2), and his description was so excellent that his name has since adhered to this anomaly. He distinguished between pulsion and traction diverticula and described a hypopharyngeal diverticulum as a pulsion diverticulum above the esophageal inlet.

The typical patient is elderly (most commonly between 60 and 70 years old) and is almost twice as likely to be a man. Although a Zenker's diverticulum presents infrequently, the symptoms, which include dysphagia, choking, chronic cough, and regurgitation of food, as well as life-threatening esophageal obstruction or aspiration pneumonia, can be extremely disabling. Diagnosis is made by history and barium swallow.

PATHOGENESIS

The cause of pharyngeal diverticula remains controversial. Increased sphincter pressure, delayed or incomplete relaxation and premature contraction as a disorder in the coordination of the swallowing mechanism are some of the theories (3,4,5,6).

There is agreement, however, about the site at which the diverticulum forms : the dorsal wall of the most caudal part of the hypopharynx. Between the propulsive oblique fibers of the inferior constrictor muscle and the horizontal fibers of the cricopharyngeal muscle there is a triangular area with only scanty muscle fibers. This weak spot, named the triangle of Killian is important in the pathogenesis. It is at this site that the mucosa of the hypopharynx pouches out as a result of a pressure gradient between the hypopharyngeal lumen and the prevertebral space. At a later stage, mucosal prolapse forms the diverticular sac (7).

ENDOSCOPIC TREATMENT

For a long time the therapy of choice was the transcutaneous diverticulectomy with an additional myotomy of the pars fundiformis of the cricopharyngeal muscle (8). In 1917, Mosher (9) was the first to report an endoscopic treatment of Zenker's diverticulum. In the 1930s, Seiffert (10) and Dohlman (11) independently used this method again, and during the following years it was modified and successfully optimized (12, 13). In 1981, Van Overbeek (14) introduced microendoscopic surgery for hypopharyngeal diverticulum using the operating microscope and the CO_2 laser.

The records of 20 patients treated by microsurgical endoscopic laser diverticulotomy at our department were reviewed. All patients had the diagnosis established pre-operatively by barium swallow radiography. The sex distribution was even (males:females = 11:9) and the mean age was 74 years.

In all cases the endoscopy was performed under general anaesthesia and initially involved the demonstration of the pouch and the exclusion of any signs of malignancy. After insertion of a diverticuloscope the muscular bridge between the pouch and oesophagus was identified using the operating microscope with a 400 mm lens. This bridge was then carefully divided using a continuous cutting CO_2-laser beam at 15-20 watt power. With severance of the tissue bridge between the esophagus and the diverticulum, a transmucosal upper esophageal sphincterotomy is achieved, and an ample overflow from the diverticulum to the esophagus is effected in a very short operation time. A nasogastric tube is positioned. The patient has an immediate postoperative chest X-ray and regular clinical examination of the neck and auscultation of the chest to detect possible surgical emphysema or pneumomediastinitis. All patients receive parenteral antibiotics.

On the first postoperative day, the alimentation only consists of fluids. If the healing is uncomplicated and undisturbed, the nasogastric tube is removed on the second postoperative day. Prior to discharge from the hospital, a control X-ray is done.

Of the 20 patients treated by CO_2-laser diverticulotomy 60% were very satisfied and 35% were fairly satisfied. In one patient the procedure did not seem successful. The complication rate was low. One patient developed a mediastinitis which was treated conservatively.

CONCLUSION

On the overall functional results after laser surgical tissue bridge dissection are excellent. Van Overbeek (7,15) reported that just 0.7% of 216 patients were unsatisfied with the treatment. Similar success rates are reported by Benjamin (16), Knegt (17), Kuhn (18), and Flikweert (19). The main advantages of the laser surgical dissection are the excellent orientation during surgery, no bleeding, less tissue trauma, less postoperative pain, and oral alimentation after 2-3 days. In contrast to the transcutaneous operation technique, the transoral tissue bridge dissection can be carried out repeatedly without an increasing risk (7). Because of the short operating time, patients recover more quickly, thus reducing hospitalisation. Since the functional results are excellent and the complication rate is low, we consider the micro-endoscopic CO_2-laser myotomy the treatment of choice for Zenker's diverticulum.

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CO_2-LASER REDUCTION OF THE INFERIOR TURBINATES: TECHNIQUE AND LONG-TERM RESULTS.

S. Katz M.D., B. Schmelzer M.D.Ph.D., G. Vidts M.D.

ABSTRACT

In this work the CO_2-laser reduction of inferior turbinates and our short- and long-term results with this technique are evaluated. We divided our study group in 2 populations : one group with a follow-up of 3,5 years for which we could obtain objective measurements of the nasal patency by means of a preoperative and postoperative active anterior rhinomanometry and another group with a follow-up of more than 15 years in which (because of the absence of a pre-operative rhinomanometry) we could only obtain a subjective evaluation of the results by means of a questionnaire. Relief of nasal obstruction was reported by 87,4 % of the patients until 5 years after laser surgery on the inferior turbinates. There seems to be no functional impairment on the nasal mucosa after this kind of surgery.

INTRODUCTION

In the ENT department at the Middelheim Hospital in Antwerp we use the CO_2-laser as a tool to reduce chronically hypertrophied inferior turbinates (not responding to adequate local and systemic therapy) since 1981. Up to January 2000 this procedure was performed on almost 900 patients, with or without an associated major nasal intervention (septoplasty, septorhinoplasty). In this report we will describe this surgical technique and analyze its long-term results.

SURGICAL TECHNIQUE

We most often perform the procedure under local anesthesia. Only in selected cases, e.g. in some children or on request, a general anesthesia is used. The local surface anesthesia consists of inserting cotton pledgets, which have been immersed in a solution of 4% pantocaine with 1:1000 epinephrine. These are placed along the inferior part of the turbinate and are left in place for about 15 minutes.

The patient's face is protected by a wet gauze leaving only the nostril exposed. Protective glasses are worn by the medical staff present in the operating room. We use a Sharplan carbon dioxide laser which is fixed on a Zeiss operating microscope with a working distance of 250mm. An "Acuspot 711" micromanipulator is used. The laser is set to

continuous mode at a power between 8 and 15 watt. To expose the inferior turbinate one can use a nasal or an ear speculum. The latter gives less overview but has the advantage of protecting the nares, alar rims and the septum from accidental absorption of laser energy (1).

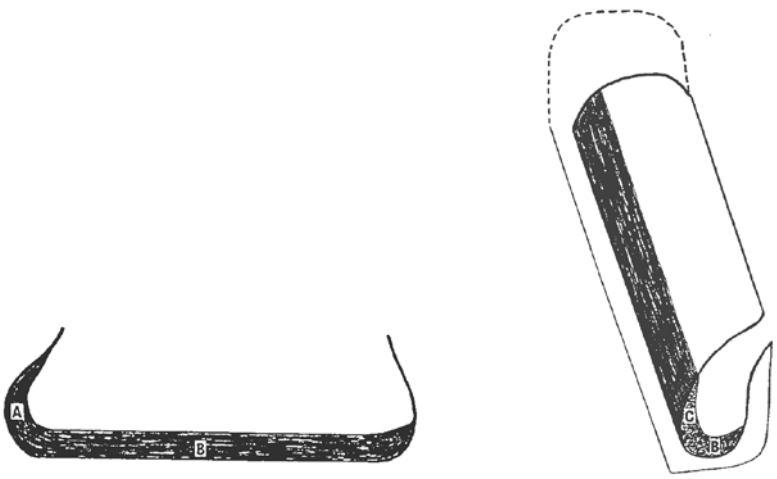

Fig. 1: Surgical technique. Vaporization of the head (A), the inferior border (B) and the inferior one third of the medial surface (C) of the turbinate over its whole length.

Using a defocussed laser beam, the turbinate is vapourised in a cross-hatched pattern to preserve islands of mucosa that would hasten the regrowth of ciliated mucosa. We achieved the best results by vapourising the head of the inferior turbinate and the inferior border and inferior one third of the medial surface of the turbinate over its whole length (Fig. 1). To provide continuous evacuation of the fumes from the operative field the tip of a suction catheter is preferably placed in the posterior space of the other nostril. The surgical act itself is mostly completed within 10 minutes.

Because of the absence of peroperative haemorrhage (due to the biophysical properties of the laser beam) a nasal packing is not necessary. The patient can leave the hospital immediately after the surgical procedure. Post-operative care involves saline nasal cleaning and removal of crusts and mucus during the phase of healing. A follow-up visit is scheduled 2 to 3 weeks after surgery.

MATERIALS AND METHODS

In the period between 1981 and January 2000, 886 patients have had surgery on their inferior turbinates using the described technique.A total of 437 of these patients underwent this procedure concurrently with other intranasal operations. In order to evaluate the "absolute" effectiveness of the turbinate surgery this study only includes those patients who underwent bilateral CO_2-laser reduction of the inferior turbinates as an isolated procedure.

The study population thus consists of 449 patients who had had turbinate surgery using the described surgical technique. We only began to perform a pre-operative active anterior rhinomanometry on patients who were scheduled for a CO_2-laser therapy since June 1996 in a more or less systematic way. This fact divided our study population in 2 groups (fig. 2): a first group of 104 patients who had had their turbinate surgery before June 1996 and a second group of 345 patients who were operated after June 1996 and who should have a pre-operative rhinomanometry. Because we dit not have an objective preoperative measurement of nasal patency for the first group of patients, we asked those patients the subjective results of their turbinate surgery by sending them a questionnaire.

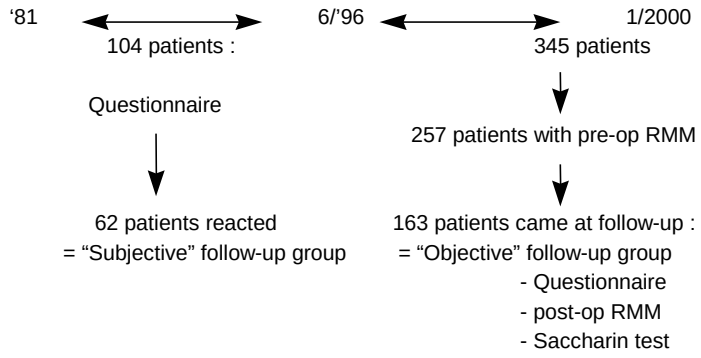

Fig. 2 Materials & Methods RMM-Rhinomanometry

Of the 104 patients, 62 mailed back the completed questionnaire. This gave us information about the results of the operation for a follow-up period of up to 16 years. The files of the patients of the second group were checked in order to find those cases with a pre-operative rhinomanometry. This reduced this patient number to 257. Those patients did not only receive a questionnaire, but were also invited to attend a follow-up visit in order to perform a post-operative rhinomanometry and a saccharin test for mucociliary clearance (2,3). Of these patients 163 showed up at the follow-up visit.

In summary, the first ("subjective") group, with a follow-up period of up to 16 years, consisted of 62 patients and the second ("objective") group, with a follow-up period of 3,5 years, consisted of 163 patients. The total study population thus contained 225 patients (fig.3).

" Subjective" study group (n = 62)	
Sex ratio : 35 m / 27 f	Anesthesia : 53 local
Age : from 11 to 78 (mean : 37,8 y)	9 general
" Objective" study group (n = 163)	
Sex ratio : 92 m / 71 f	Anesthesia : 155 local
Age : from 10 to 79 (mean : 36,4 y)	8 general
Total study population (n = 225)	
Sex ratio : 127 m / 98 f	Anesthesia : 208 local
Age : from 10 to 79 (mean : 36,9 y)	17 general

Fig. 3 Study groups

There were 127 males and 98 females, ranging in age (at the time of the operation) from 10 tot 79 years (mean age 36,9 years). All of the included patients underwent the operation only once. A reintervention was not necessary or required.

Seven of the 449 patients of the initial study population needed repeated treatment and one patient required a third session of laser evaporization in order to obtain satisfactory nasal breathing. These patients, unfortunately, did not respond to our study questionnaire and thus could not be included.

RESULTS

In order to evaluate the results at different terms we divided the patients of both study groups into several follow-up groups. Fig. 4 shows the division of the 163 patients of the "objective" study group into 3 follow-up groups. The reason why the first group begins at 2 months follow-up is because until approximately that time we could sometimes still find some crusts in the nose due to the cicatrization of the wound. By starting at 2 months follow-up we wanted to make a difference between these crusts and the ones due to eventually permanent atrophic changes in the nasal mucosa. The "subjective" study group was also divided into 3 follow-up groups (fig. 5).

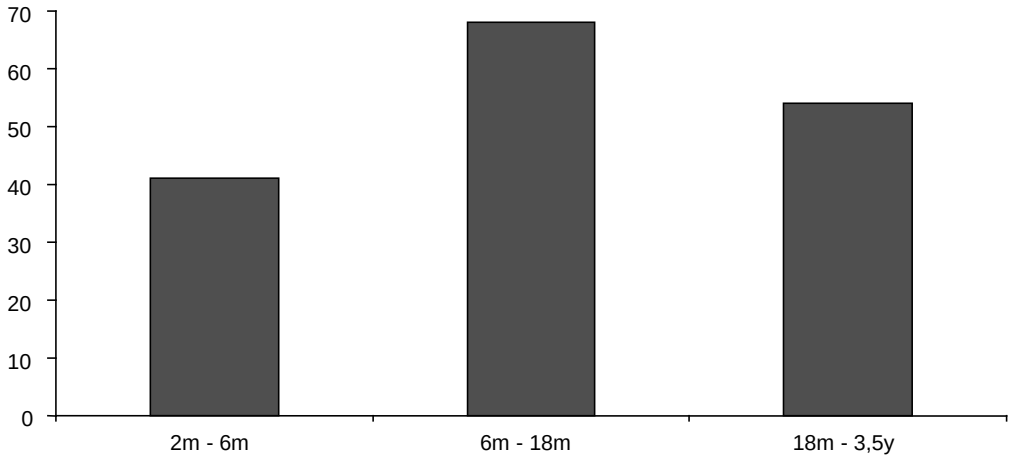

Fig. 4. Division of the "objective" study group (n = 163) into 3 follow-up periods patients

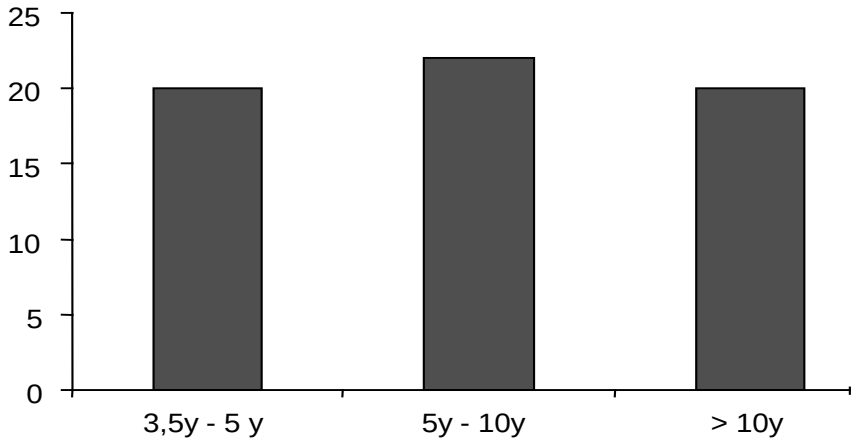

Fig. 5. Division of the "subjective" study group (n = 62) into 3 follow-up periods patients

The results of the active anterior rhinomanometry for the 3 follow-up periods of the "objective" study group are listed in Table 1. Table 2 shows the mucociliary clearance time for saccharin. The answers of the questionnaires are summarized in Table 3.

DISCUSSION

Table 1 shows that laser surgery on the inferior turbinates provides a statistically significant ($p < 0,05$) improvement of the nasal patency, measured by rhinomanometry, for a follow-up of 3,5 years. When considering the answers of the questionnaires (Table 3) one can assume that the same statement can probably be made for a longer follow-up period. Namely , 87,4% of the patients seemed to be satisfied with their nasal breathing after 5 years follow-up. In the groups with a follow-up longer than 5 years one can notice a decline in patient satisfaction. We believe that this decline as the years elapse is not just time-linked, but that it

is rather due to the fact that after a while some patients are not motivated anymore to treat their underlying (allergic or vasomotor) rhinopathy.

Table 1 : Mean total nasal resistance values for the different "objective" follow-up groups
(expressed in Pa/ccm/s at a fixed reference pressure of 150 Pascal)

	2m - 6m	6m-18m	18m-3,5y	MEAN
Preoperative	1,24	1,21	1,25	1,23
Postoperative	0,24	0,26	0,25	0,25

Nasal symptoms other than nasal obstruction showed no significant change following surgery. Most patients with symptoms of rhinorrhea and postnasal discharge were not relieved of them postoperatively. The same observation has however been made for other series of CO_2-laser reduction of the inferior turbinates (4) and for other techniques like turbinoplasty (5) and turbinectomy (6,7).

The normal mean post-operative saccharin transit time (Table 2) and the fact that no crusting or foul odor were reported in the questionnaires (Table 3) proves that there has been no interference with the normal function and physiology of the nasal mucosa.

Table 2. Mean post-operative saccharin clearance time (minutes) for the different "objective" follow-up groups

	2m - 6m	6m-18m	18m-3,5y	MEAN
Right nostril	8,8	9,4	9,0	9,1 min.
Left nostril	8,9	9,2	9,4	9,2 min.

Table 3. Answers of the questionnaires for the whole study population.

	2m-6m		6m-18m		18m-3,5y		3,5y-5y		TOTAL		5y-10y		>10y	
Patient satisfaction :	yes	no	yes	no	yes	no	yes	no	yes %	no %	yes	no	yes	no
Nasal breathing improved	35	6	61	7	49	5	15	5	87,4	12,6	14	8	11	9
Rhinorrhea / postnasal drip	13	28	18	50	13	41	8	12	28,4	71,6	7	15	8	12
Complications :														
- Functional :														
Dryness / crusting	0	41	0	68	0	54	0	20	0	100	0	22	0	20
Foul odor	0	41	0	68	0	54	0	20	0	100	0	22	0	20
- Epistaxis :														
Primary	0	41	1	67	1	53	1	19	1,6	98,4	0	22	1	19
Secondary	0	41	0	68	0	54	0	20	0	100	0	22	0	20

The epistaxis rate was very low, which is due to the hemostatic properties of the CO_2-laser. We must, however, confess that in a number of cases a minimal bleeding occured, which always stopped spontaneously before the end of the procedure and therefore could not be experienced by the patient as an epistaxis.

CONCLUSION

When considering patient satisfaction (which is the goal of our treatment) this work shows that after 5 years follow-up a success-rate of 87,4% could be reached. It is important that pre-operatively the patient is well aware of the expected benefit of the procedure : it is intended to relieve nasal obstruction, not to stop nasal secretion. Sustained motivation of the patient for post-operative medical treatment of the underlying rhinopathy is most important in order to prevent recurrence of nasal obstruction with time (8).

The addition of the CO_2-laser as a surgical tool offers new possibilities to overcome the drawbacks of conventional turbinate surgery through its biophysical properties. One of the major advantages of laser turbinate surgery is that it can be performed with excellent precision and without post-operative pain and bleeding (9,10). It allows fast treatment in an outpatient setting.

ACKNOWLEDGEMENT

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CO_2 LASER IN MIDDLE EAR SURGERY

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The advantages of laser application in middle ear surgery have already been pointed out by numerous authors. In German-speaking countries, preference is given to the continuous-wave CO_2 laser and the pulsed Er:YAG laser. The argon and KTP-532 lasers are propagated particularly in the USA, but we rarely apply them because of their unfavorable physical properties.

There are numerous indications for noncontact laser application in middle ear surgery. Thus stapes surgery can no longer dispense with the laser for either primary or revision interventions. Further indications are: chronic hyperplastic mucosal suppuration, tympanosclerosis, adhesive processes, unfavorably situated cholesteatomas, caput mallei

fixation and middle ear anomalies. The laser is particularly useful in the area of revision surgery, where it frequently enables interventions that are no longer possible with conventional instruments.

The advantages of stapedotomy compared to stapedectomy have already been confirmed by numerous authors (Smyth and Hassard 1978, Fisch 1982, Marquet 1985, Causse et al. 1985, Somers et al. 1994, Persson et al. 1997, etc.). All studies demonstrate that stapedotomy causes fewer inner ear damages and less vertigo than conventional stapedectomy. Despite these advantages, it is nevertheless difficult to create a precise, round stapedotomy opening with mechanical instruments (drill, perforator). A partially fixed stapes is often accidentally mobilized by the manipulations (floating footplate) and a thin footplate not infrequently fractured. Perforation of a thick footplate obliterating the oval niche (obliterative otosclerosis) with the drill can cause significant inner ear trauma through vibrations.

Laser stapedotomy, on the other hand, when performed with the suitable wavelength and the effective and safe parameters, enables the ear surgeon to create, by precise and non-contact vaporization, a circular perforation in the stapes footplate regardless of its thickness or degree of fixation without mechanically traumatizing the inner ear.

Prior to the clinical application of the laser, extensive laboratory studies had to be performed in order to determine the ideal wavelength of laser radiation for stapedotomy and to establish the effective and safe laser parameters for each type of laser.

The good results we have obtained so far clearly document that the incidence and severity of postoperative complications after CO_2 laser stapedotomy are lower than after conventional interventions. Besides significantly reducing the mechanical inner ear trauma, CO_2 laser stapedotomy has contributed towards a simplification of the technically difficult operation. These considerations alone justify our theoretical and experimental efforts to determine the safest laser for stapes surgery.

In revision stapedotomy, the CO_2 laser provides the ear surgeon with three important advantages compared to the conventional technique: 1. improved diagnostic precision; 2. the possibility of better stabilization of the new prosthesis in the center of the oval niche; and 3. reduction of the inner ear trauma.

The results we have obtained so far suggest an improvement of the postoperative hearing results and an elemination of a significant hearing loss after revision stapedotomy. The CO_2 laser enables the ear surgeon to eliminate a sound conduction hearing loss recurring after stapedotomy with high precision and safety. For our operative procedure, this means:

1. CO_2 laser stapedotomy is already performed at first interventions in order to minimize the risk of prosthesis migration,which is by far the most frequent cause for recurrence of a sound conduction hearing loss after stapedotomy or stapedectomy.

2. In order to avoid erosions of the incus, which are frequently the result of prosthesis migration and fixation with the bone surrounding the oval niche, a revision should be performed soon after a significant sound conduction hearing loss has been detected, and

3. A stapedotomy of the neomembrane of the oval window should always be performed. Three reasons argue in favor of this: **a)** The covering neomembrane frequently conceals a residually fixed stapes footplate, **b)** The depth of the oval niche can be precisely ascertained and the length of the prosthesis exactly determined, and **c)** The stapedotomy opening stabilizes the new prosthesis in the center of the oval window and minimizes the risk of renewed migration.

Our clinical experience is thus far based on 320 stapedotomies with the CO_2 laser. None of the patients evidenced intra- or postoperative complications. The mean sensorineural hearing losses before and after CO_2 laser stapedotomy clearly show that there was no appreciable deterioration of inner ear function. No patient became deaf. A vestibular disturbance occurred in only seven cases because of too long a prosthesis. The postoperative

hearing gain in primary stapedotomies (263 cases) does not differ from the results of conventional surgery. After revision operation (57 cases), on the other hand, our patients have significantly better hearing and fewer complications than after conventional surgery. Some of our revision operations could only be performed by using the laser.

Thus the CO_2 laser appears to be well suited for application in stapes surgery. It does not endanger the inner ear with the laser parameters limited as specified. The “one shot” stapedotomy which is able to achieve an adequately large (0.5 to 0.7 mm in diameter) circular footplate perforation with a single application of laser radiation without appreciable thermic damage to the surrounding area is a great advantage in CO_2 laser stapedotomy. For this purpose, new modes of application are developed, as, for instance, application of laser radiation with rotating mirrors (SurgiTouch™, Sharplan Co.), which show very promising results.

Application of the laser in stapedioplasty contributes to the optimization of this high-precision intervention and shows promise of reducing the incidence of inner ear damages in larger numbers of cases.

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LASER SURGERY IN EARLY LARYNGEAL CANCER

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INTRODUCTION

In the USA, approximately 11,600 new cases of laryngeal cancer were identified in 1995, representing less than 1% of the 1,252,000 new cancers overall (excluding skin)[1]. Most of the laryngeal tumours are glottic carcinomas. Giving early symptoms of hoarseness, 60% of the tumours is diagnosed as "early glottic carcinomas" (T_{is} or T_1).

There is a strong relation between smoking and laryngeal cancer. Filters, light tabacco and non-inhaling seem to decrease the effect of smoking. Interestingly, the relative risk of hand-rolled cigarettes is three times higher when compared to normal cigarettes. The influence of pipe- and cigar-smoking is not completely clear. Inhaling of smoke from other leaves than tobacco is also associated with laryngeal cancer.

Radiation to the head and neck in young individuals has been implicated in later development of carcinoma of the larynx. Asbestos, glass wool, mustard gas, nickel en some mineral oils are carcinogens for the larynx[2] Occupations related to laryngeal cancer are: furriers, shoe shine boys, leather workers, labourers in stonework and brickwork, mechanics, pump attendants, workers in petrochemistry and welders. Gastroesophageal reflux, viral infections and genetic predisposition seem to play a role which is not exactly clarified.

There is a considerable geographical variation in the incidence of laryngeal cancer. The incidence is higher in urban areas, especially in regions where dark tobacco is consumed (Basque country, Porto Allegre in Brazil, Varese Italy). In the Netherlands, 743 new cases of laryngeal cancer were recorded in 1995. In the same year, 202 patients died due to the disease. (The number of new cases in 1993 in the USA is estimated at 12,600 with 3,800 deaths due to the disease.[3]) In 1995, the mortality/incidence ratio for laryngeal cancer in the Netherlands was 27 for males and 26 for females.[4]

The annual incidence in males approximates 8 per 100.000 persons.[4] The incidence in the Netherlands seems to decrease 2.5% annually.[5] The incidence of laryngeal cancer in the Netherlands leads to 1 new new case in 9 years for a general practitioner. In a centre for Head and Neck Oncology[6] 50-70 new patients are diagnosed each year.

The disease is five times more common in males than in females. This ratio has dropped from 10:1 with the increase of females who smoke.[7,8] Peak incidence is between 40 and 70 years, with the majority of cases occurring in the 6th and 7th decades.

In a recent population-based study performed in the west of Holland the incidence of early glottic cancer was 2.0 cases per 100 000 inhabitants per year.[9]

The main treatment options for early laryngeal cancer are endoscopic surgical excision with the CO_2-laser and radiation therapy. Local control rates seem to be comparable (table 1 and 2). Side-effects, voice quality and Quality of Life issues may therefore play a decisive role in the choice of treatment. The current study was designed to to evaluate a standardised surgical technique and both Quality Of Life (QOL) and voice-quality.

PATIENTS

Between 1996 and 1998 23 patients with early glottic cancer were treated with laser surgery. Twenty-one patients were male; 2 were female. Age ranged from 40 to 78 years (median 68 years).

Twenty patients had primary early glottic carcinoma. Two patients had a carcinoma in situ; 18 patients were staged T1a carcinoma. One of these patients had involvement of the

anterior commissure. Because this patiënt was irradiated earlier for oropharyngeal carcinoma the options were laryngectomy or laser surgery. The patiënt choose to have laser surgery.

Three patients had a recurrence of early glottic carcinoma after irradiation. One of these was a patient with T1b carcinoma who had a recurrence on one vocal cord and rejected laryngectomy.

Table 1: Local control and larynx preservation in primary T1 laryngeal cancer treated with radiotherapy.[14]

	Number of patients	Follow-up (in months)	Local control, (%)	Larynx preservation, (%)
Mittal 1983[15]	177	>36	83	94
Dickens 1983[16]	96	>24	92	90
Maceri 1985[17]	77	>36	79	92
Kelly 1989[18]	95	36	95	99
Kaiser 1989[19]	102	60	66	89
Epstein 1990[20]	43	60	89	92
Pelletieri 1991[21]	113	>60	90	93
Mendenhall 1994[22]	140	>24	90	98
Rosier 1994[23]	41	69	90	90
van der Voet 1998[11]	383	89	89	90
Sjogren 2000[9]	359	76	88	90

Table 2: Local control and larynx preservation in primary T1 laryngeal cancer treated with laser surgery.[14]

	Number of patients	Follow-up (in months)	Local control (%)	Larynx preservation (%)
Shapshay 1990[24]	20	42	90	ns
Eckel 1992[25]	24	22	92	100
Cragle 1993[26]	14	24	93	93
Steiner 1993[27]	96	78	>94	99-100
Czigner 1994[28]	34	ns	88	94
Myers 1994[29]	50	ns	92	100
Rudert 1995[30]	88	40	92	97-100
Lindholm 1995[31]	47	>12	90	100
Mahieu 1999[32]	96	39	94	100
Sjogren (current study)	19	19	95*	100

***2 patients were irradiated postoperatively because of positive margins at histopathologic examination**

Five patients did not participate in the voice analysis and stroboscopy due to unrelated health problems or lack of informed consent.

METHODS

Laser surgery was only performed in mid-cord lesions when at least a 2mm margin within the affected cord could be obtained. The final decision to perform laser treatment was therefore made during microlaryngoscopy. The surgical technique consisted of an en bloc resection with the laser. The resected specimen was pinned to a board to facilitate histopathological examination. The margins of the dissection were sampled (from the patient) in all directions: lateral (sinus of Morgagni), anterior commissure, posterior (processus vocalis), caudal (infraglottic) and deep (vocalis muscle). The samples were sent for frozen section when the surgical excision could be expanded within the limits of the vocal cord. In

other cases the samples were used for definitive histology only. Both the excised tissue bloc and the samples of the margins were used to decide whether or not to irradiate postoperatively. Patients were seen for follow-up every 4-6 weeks. A post-treatment stroboscopy was obtained. Patients underwent subjective voice rating using the Voice Handicap Index (VHI)[10] for self-assesment. This index evaluates the patients disability on three levels: physical, functional and emotional. Voice evaluation was performed by trained listeners using the GRBAS system.

For evaluation of the QOL the EORTC general questionnaire was used scoring items such as global health status, physical functioning, emotional functioning and social functioning (table3). More specific items pertaining to patients with head and neck cancer such as voice, eating disabilities and saliva production were scored by the EORTC Head and Neck module (table 4).

Table 3: Items from the EORTC QOL questionnaire. Results from our patients compared to the EORTC norm group

	Functionality score	
	laser	**healthy controls**
EORTC QOL general		
General health	77%	75%
Physical functioning	82%	90%
Role functioning	79%	83%
Emotional functioning	83%	83%
Cognitive functioning	87%	87%
Social functioning	92%	86%

Table 4: Proportion dysfunction after laser surgery as scored by the EORTC QOL head and neck module.

Items from head and neck module	**Dysfunction**
Pain	9%
Swallowing	4%
Senses	6%
Speech	17%
Social eating	1%
Social contact	3%
Sexuality	9%
Teeth	6%
Opening mouth	2%
Dry mouth	19%
Sticky saliva	12%
Cough	25%
Felt ill	2%
Pain killers	17%
Nutritional support	0%
Feeding tube	0%
Weight loss	6%
Weight gain	17%

RESULTS

Oncological results

The mean follow-up time was 19 months (range 2-33). One patient died (not tumour related) and three patients recurred. One of these patients was the patient with oropharyngeal carcinoma and involvement of the anterior commissure. He recurred after 24 months and was irradiated again. Another patient had residual disease after 1 month. Since he was already irradiated he underwent salvage laryngectomy. Only 1 patiënt with primary, early, midcord carcinoma recurred after laser surgery (FU 9 months). Although the recurrence was very small and amenable for a second laser resection, this patient was irradiated.

Histopathological examination necessitated postoperative irradiation in two other patients.

Stroboscopy

Stroboscopy was normal only in one patient. In all other patients the mucosal wave of the involved cord was absent.

Voice

Six patients rated their voice normal, 6 slightly impaired, 6 moderately impaired and none severely impaired.

One of the three patients who had previous irradiation did not participate in the voice evaluation but he had a very poor voice. The voice was greatly improved with an Isshiki type 1 thyroplasty. The second patiënt who was irradiated for T1b carcinoma had the worst voice objectively. The third patient did not participate in voice evaluation because he underwent a salvage laryngectomy because of residual disease.

GRBAS

In perceptual analysis by trained listeners 66% of voices were rated as abnormal. 75% of these were considered breathy and 25% rough. Other parameters were within normal limits.

VHI

The average score for the VHI was 11, 6 and 3 points for physical, functional and emotional disability respectively, all out of a possible 60 points. The total average score for the three items was 20 out of 180, which is considered within normal limits.

QOL

As for QOL (table 3), none of the categories in the EORTC general questionnaire showed substantial difference between patients and a control-group consisting of healthy individuals (sampled from the Norwegian general public by the EORTC).

The results for the QOL – Head and Neck module of the EORTC are in table 4.

DISCUSSION

Early glottic cancer can be cured using endoscopic surgical excision, thyrotomy with cordectomy, vertical partial laryngectomy and radiation therapy. The main options are endoscopic surgical excision with the laser and radiation therapy. The goals of any treatment for early glottic carcinoma should be (1) complete removal of all malignant disease, (2) preservation of function (respiration, deglutition, phonation, sphincteric function, airway protection) and (3) predictable and reliable rehabilitation of the patient. The key to effective treatment is of course to match the therapy with the nature and extent of the malignancy in a manner that does not compromise cure rate but preserves maximum laryngeal function.

Ad 1. Local relapse-rates vary between 6 and 12% for laser surgery and between 5 and 34% for irradiation (table 1 and 2). A retrospective study from Leiden (359 patients irradiated for T_{is} and T_1-lesions) yielded a recurrence rate of 9% after 2 years and 12% after 5 years. Only 5 patients recurred more than 5 years after irradiation[9].

Number of patients in this study are low and follow-up is too short to evaluate oncological results. However, it seems that patients with primary mid-cord lesions are

favourable candidates for laser treatment: only one patient of 19 fullfilling all inclusion criteria recurred. Unfortunately, this patient did not undergo a second procedure. On the other hand, the only patient with involvement of the anterior commissure recurred after 24 months. Obviously, in this study, the patients with recurrences after irradiation did worse. One of these patients underwent salvage laryngectomy and the other two accounted for the worst voices. One of these two needed an Isshiki thyroplasty to obtain an acceptable voice.

Ad 2. Comparison of the two treatment modalities regarding post-treatment voice quality is nearly impossible. Several parameters influence the individual outcome: cessation of smoking, amount of tissue removed, time elapsed since treatment, etc. In addition, voice analysis methods lack uniformity, reliability and validity. It is however clear that both treatment will affect voice quality. There are no reports in literature favouring one treatment over the other.

Larynx preservation seems to be higher in patients primarily treated with laser surgery (table 1 and 2). This is probably due to the fact that recurrent disease following laser surgery can still be treated with irradiation.

Striking in this study was, although perceptual analysis was abnormal in 66% of the cases, that patients never rated their voice severely impaired. Moreover, the Voice Handicap Index was in normal limits. In addition, when voice complaints were present, they had little impact on the QOL. It seems that trained listeners are too critical and patients quite happy with their voice.

Ad 3. Despite the fact that early glottic cancer is the most common head and neck tumour, little is known about the physical and psychosocial outcomes of these patients. In a recent study from the Netherlands Cancer Institute[11] the complication-rate after irradiation of early glottic cancer (T_{is} and T_1) increased from 15.3% after 5 years to 35.3% after 15 years. Complications were hoarseness and oedema. In another study, from Rotterdam[12], it appeared that irradiated T_1 glottic carcinoma patients experienced a considerable number of physical complaints such as sore muscles, fatigue, phlegm, frequent colds, speech problems and problems in swallowing. In addition to that, 10% of the patients reported problems of psychosocial nature.

The QOL of the cancer patients in our study group appears to be comparable to normal (Norwegian) individuals. This was quite unexpected and cannot be explained. Unfortunately, our patients could not be compared to a control group who received irradiation as their treatment. It is however hard to imagine that such patients would have higher scores in the EORTC QOL questionnaire. A control group is not available for the Head and Neck module either. Some items from the module (table 4) do rate higher than expected; however, some of these ("dry mouth", "sticky saliva", "cough") cannot be attributed to laser treatment (only).

So, it seems that patients with primary mid-cord lesions are favourable candidates for CO_2-laser treatment. Voice quality, as indicated by the Voice Handicap Index, was satisfactory. On the other hand, with perceptual analysis, 66% of the voices were abnormal. As far as QOL is concerned, it is hard to compare our group of patients with other patients. However, we did not establish gross disfunction.

In addition, there are a few major advantages of laser which were not yet addressed: laser treatment offers simultaneous biopsy, staging and definitive treatment in one (outpatient) procedure. Furthermore, laser resection is an additional modality as recurrences may still be treated with irradiation and second recurrences following irradiation may still be cured with salvage surgery. In other words: in a selected population of laryngeal cancer patients primary treatment with laser will reduce the number of salvage laryngectomies. However, the individual response to either radiation therapy or laser surgery cannot be predicted yet. Recently we completed a matched control study in early laryngeal cancer[13]. One of the conclusions of this study was that levels of cyclin D1 and Ep-CAM significantly predicted the

outcome of radiation therapy in these patients. It is however too early to incorporate these immunohistochemical tests in clinical decision making.

CONCLUSION

When laser surgery is technically feasible in early glottic cancer, it is the treatment of first choice. Since laser surgery is an additional, and probably independent, treatment, it seems probable that it will reduce the number of salvage treatments. Since laryngectomy has a severe impact on QOL, the morbidity of strategies to reduce the number of laryngectomies, such as laser surgery, is acceptable.

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LASER EUSTACHIAN TUBOPLASTY, L.E.T.P.

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OBJECTIVE

Chronic Eustachian tube dysfunction is related to frequent middle ear pressure drops associated with transmission deafness, tinitus, otalgia with vertigo, tympanic membrane atelectasis and recurrent otitis media. After the failure of repeated antibiotic prescriptions the insertion of a ventilating tube in the tympanic membrane is at present the single most effective treatment. The aim of the course is to describe the technique and show the middle term results of a prospective study evaluating the first endoscopic transnasal laser assisted Eustachian tube surgery called Laser Eustachian Tuboplasty (LETP) developed for directly treating these common Eustachian tube pathologies when all conservative measures have failed or in the case of recurrence after myringotomy.

METHODS

Thirty-eight patients suffering from chronic Eustachian tube dysfunction symptoms were selected for this surgical procedure. Clinical examination involved otoscopy, tympanometry and dynamic tuboscopy. Average transmission deafness was analyzed by audiometry pre and post operatively. Failure of initial conservative measures based on topical cortisone treatment associated with logopedic therapy led to surgical indication. A total of seventy-two LETP were provided. Twenty-five patients (66 %) also presented case histories of recurrent otitis media or ventilation tube insertion. The surgical procedure consists in selectively vaporizing the mucosa and the cartilage of the roof and the posterior wall of the Eustachian tube using a CO_2 or a diode laser.

RESULTS

Subjective improvement was noted after an average of two weeks. The initial deafness was reduced in 27 patients (71 %), remained the same in 10 patients (26,3 %) and worsened in 1 patient (2,7 %). The initial tinitus was reduced in 23 patients (60,5 %), remained the same in 13 patients (34,2 %) and worsened in 2 patients (5,3 %). Recurrent otalgia, often accompanied by vertigo, was reduced in 33 patients (86,8 %) and remained the same in 5 patients (13,2 %). None of the treated patients complained of intensified otalgia. The average hearing gain analyzed by audiometry was 52,5 %. No significant complication was observed. None of the 25 patients who also presented case histories of recurrent otitis media or ventilation tube insertion experienced a recurrence after surgery.

CONCLUSION

LETP appears to be an effective tool for treating chronic Eustachian tube dysfunction. It reduces transmission deafness, tinitus and recurrent otalgia. Reduction of recurrence of otitis media with effusion that was also observed in our study seems to confer to this surgery a new prophylactic approach in order to prevent this common middle ear pathology. This new one-day surgery seems to be safe and easy. It may be applied in the future to wider indications, such as treating otologic complications of rhino-pharynx surgery or congenital deformity, and reducing middle ear surgery failures related to poor Eustachian tube function. By enhancing middle ear ventilation it may be associated in the treatment of Ménière's Disease that responds to myringotomy.

Key words: *Chronic Eustachian tube dysfunction, tinitus, recurrent otitis media, Eustachian Tuboplasty, CO_2 laser.*

INTRODUCTION

Chronic Eustachian tube dysfunction is one of the most common pathologies encountered by ENT physicians. It is related to a recurrent middle ear pressure drop with transmission deafness, tinitus, otalgia with vertigo, tympanic membrane atelectasis and recurrent Otitis media [1,2,3,4,5]. The normal middle ear lumen has an inherent tendency to lose gas by diffusion through the surrounding tissues into the circulation. This loss is compensated by the Eustachian tube function admitting just enough gas to keep the total middle ear pressure at a physiologic steady state. When this system fails to function properly, negative gas pressure will replace the physiologic atmospheric pressure, a situation that may be followed by a middle ear pressure drop.

In his latest review on the middle ear and auditory tube Sadé concluded that insertion of a ventilating tube in the tympanic membrane is at present probably the single most effective treatment in the face of middle ear negative pressure [5]. Recently Laser-Assisted Myringotomy (OtoLAM) has been described to extend the average patency closure time of the tympanic membrane to 2-3 weeks, avoiding introduction of ventilation tubes [6]. But as yet no efficient surgical procedure has been described to directly treat chronic Eustachian tube dysfunction when conservative measures have failed or in case of recurrence after myringotomy. Jansen first described a posterior Tuboplasty in 1985 [7], which consisted of an enlargement of the osseous isthmic part of the Eustachian tube. Charadon and Zini [8,9] published some variants of this technique. None of these procedures concerned the cartilaginous part of the Eustachian Tube, which is implicated in the majority of chronic Eustachian tube functional obstructions.

We have developed a new endoscopic laser-assisted surgical procedure that consists in selectively vaporizing the mucosa and the cartilage of the roof and the posterior wall of the Eustachian tube using a CO_2 or a diode laser. Increasing the elasticity of the roof and the posterior concavity of the Eustachian tube it improves the proximal opening of the tube's lumen and the tensor veli palatini muscle (TVPM) efficiency, being the main tubal dilator [10,11,12].

MATERIAL AND METHOD

The common symptoms described by patients suffering from chronic Eustachian tube dysfunction are transmission deafness, tinitus and otalgia. Otalgia is often associated with vertigo.

Bluestone confers three major functions to the Eustachian tube: ventilation, clearance, and protection of the middle ear [13]. Studying a large number of human Eustachian tubes and temporal bone specimens, Sando came to advocate a hypothesis that these different functions are localized within the Eustachian tube [1]. According to many authors, abnormal function of the Eustachian tube appears to be the most important factor in the pathogenesis of otitis media [2,3,4,5,14].

Previous clinical studies in humans have shown functional obstruction of the Eustachian tube to be the primary causal factor in the pathogenesis of otitis media with effusion [15,16]. This functional obstruction has been attributed to structural and relational variation in the Eustachian tube, to aberrant function of the paratubal muscles, or to both [16]. In the same way Sadé concluded that disturbance of the function of the Eustachian Tube muscles is a pathogenic cause for a process that may induce middle ear effusion [5]. Bluestone suggests that functional obstruction may result in persistent high negative middle ear pressure. If middle ear pressure balancing does not occur, persistent functional Eustachian tube obstruction could result in atelectasis of the tympanic membrane or a sterile otitis media effusion [2]. With the same objective Holmquist investigated fifty-one ears with posterior/superior retractions of the tympanic membrane and concluded that dysfunction of

the Eustachian tube and a small air volume of the mastoid are characteristic features of an ear with posterior/superior retraction of the tympanic membrane [17].

Two main paratubal muscles contract during swallowing or yawning. Contraction of the Levator veli palatini muscle (LVPM) pushes up and rotates the Eustachian tube. Contraction of the tensor veli palatini muscle (TVPM) brings forward the lateral lamina of the Eustachian tube inducing lateral shifting of the anterior luminal wall. The question about which of these two muscles is the main tubal dilator has been answered only recently. Honjo has shown that the Eustachian tube opens through outward displacement of the tubal wall [10]. Using a method of direct muscle stimulation of dogs, he established that the muscle responsible for opening the tube is the TVPM. Cantekin came to the same conclusion by stimulating the nerve innervating the tensor muscle in monkeys [11]. Conversely, alteration of the TVPM can create functional obstruction of the Eustachian tube [12]. The cleft palate population has a high prevalence of chronic otitis media with effusion. The lumen of the cartilaginous portion of the Eustachian tube in this population is less concave. It may be due to poor development of the lateral lamina. Doyle has shown that the cleft palate population has a limited ability to open the Eustachian tube by swallowing. The obstruction was primarily related to the inability of the TVPM to dilate the Eustachian tube actively during swallowing and appears to be the major factor responsible for the pathogenesis of otitis media with effusion in this population [18].

At the same time we verified the anatomical connections of this area on human cadavers clarifying average dimensions of the Eustachian tube. Therefore, scrupulous dissection was provided on a wide series of adult heads. According to our measurements the

average total length of the Eustachian tube is 37.5 mm. The average length of the cartilaginous part is 23 mm. The tube lies at an angle of 42 degrees in relation to the horizontal plane. The position of the TVPM and the LVPM in relation to the lumen and the cartilage was well studied [Figure 1,2]. Because of Ostmann's Fatty tissue (OF) possible role in Eustachian Tube function, which according to Aoki is implicated in otitis media with effusion [19], anatomical relationships between Ostmann's Fatty tissue (OF) and the Eustachian tube were strictly verified.

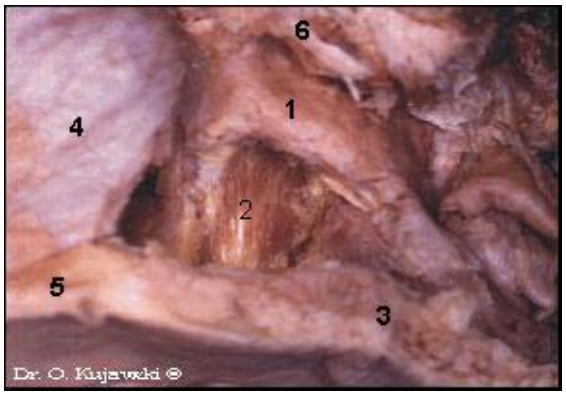


Figure 1: Proximal overview of a right Eustachian tube. (1) Cartilage. (2) Tensor veli palatini muscle (TVPM). (3) Levator veli palatini muscle (LVPM). (4) The septum. (5) Palate. (6) Skull base.

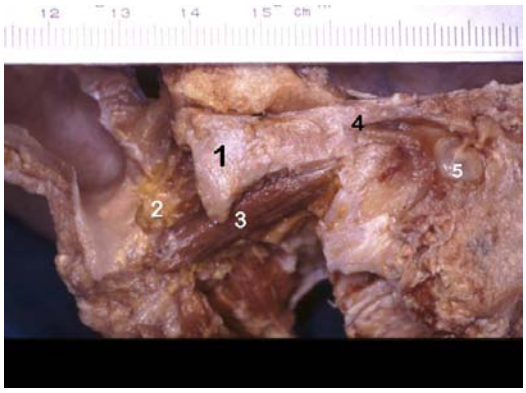
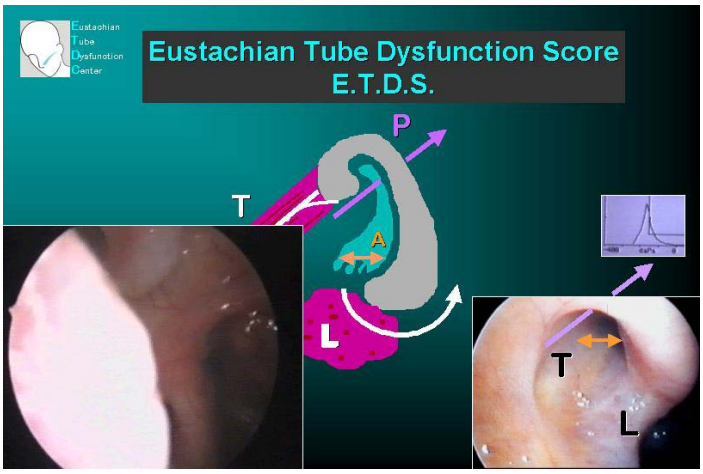


Figure 2: Total overview of a right Eustachian tube. (1) Cartilage. (2) Ostman fatty tissue. (3) Levator veli palatini muscle (LVPM). (4) Pre-isthmic area. (5) Tympanic membrane

All data contained in the common literature lead us to define a new functional approach of the most common chronic Eustachian tube pathology. Therefore, we created a multidisciplinary consultation specialized in chronic Eustachian tube dysfunctions. The evaluation method applied in our new medical and surgical consultation is based on a meticulous clinical examination including history, optical rhinoscopy, rhino pharyngoscopy,

tuboscopy, otoscopy, audiometry and tympanometry. In order to quantify the degree of Eustachian tube dysfunction correlated the severity of its symptoms we apply an *Eustachian Tube Dysfunction Score (ETDS)*. We retained four dynamic parameters: mobility of the levator veli palatini muscle (TVPM) "L", mobility of the tensor veli palatini muscle (LVPM) "T", obvious aperture of the proximal lumen of the Eustachian tube "A" and the steady state permeability of the Eustachian tube "P" [Figure 3]. To estimate the last parameter with tympanometry we considered the permeability as normal until the maximal peak gap of - 50 daPA.



A perfect mobility of the levator and tensor veli palatini muscles with aperture of proximal Eustachian tube lumen and correct permeability of the Eustachian tube defines the Score 0 which reveals no clinical dysfunction. The same conditions, however associated with middle ear pressure drop defines Score 1. Inefficient permeability with visibility of only the levator muscle and aperture of the lumen defines Score 2a. Inefficient permeability with mobility of both muscles but without aperture of the lumen defines Score 2b. Mobility of only the levator muscle defines Score 3. Score 4 is characterized by lack of any dynamics. Score 5 defines Patulous Eustachian tube. Some severe atelectasis often remain in a steady state. As there is no direct correlation between the severity of Eustachian tube dysfunction and tympanic membrane atelectasis grade [5] no tympanic membrane atelectasis grade was retained in ETDS.

We associated tubal logopedy or speech therapy sessions “Video feedback” led by orthophonic logopeds specialized in tubal rehabilitation on patients with ETDS 1 and 2a before surgery to increase the efficiency of initial conservative treatment [20].

We excluded from our evaluation patients with broad associated pathologies known to be responsible for Eustachian Tube dysfunction such obvious nasal cavity shrinkage due to septal deviation [21] or any acute upper respiratory tract infection. Many people suffering from aspecific or allergic chronic rhinitis also suffer from chronic Eustachian tube dysfunction. We encountered the majority of them in the ETDS 2b group with an evident edema of the tubal ostium. We therefore routinely applied a topical cortisone treatment (Fluticason-17-propionas) for a minimum of two months before any surgical indication. We included in our surgical treatment group only patients who did not respond on a long-term basis to this treatment. To-date we have excluded from this group any congenital malformations such as cleft palate, tumor process of the rhino pharynx or Cholesteatoma. We did not operate on patients younger than 11 years of age.

	0	1	2a	2b	3	4	5
L	✓	✓	✓	✓	✓		
T	✓	✓		✓.			
A	✓	✓	✓				
P	✓						✓

Figure 3: Eustachian Tube Dysfunction Score ETDS table. A perfect mobility of the levator and tensor veli palatini muscles with aperture of proximal Eustachian tube lumen and correct permeability of the Eustachian tube defines Score 0 which reveals no clinical dysfunction. The same conditions, however associated with middle ear pressure drop defines Score 1. Inefficient permeability with visibility of only the levator muscle and aperture of the lumen defines Score 2a. Inefficient permeability with mobility of both muscles but without aperture of the lumen defines Score 2b. Mobility of only the levator muscle defines Score 3. Score 4. is characterized by lack of any dynamics. Score 5 defines Patulous Eustachian tube.

The intra-luminal endoscopy of the cartilaginous segment of Eustachian Tube was routinely carried out under local anesthesia with a 1.9-mm fibro-endoscope. We were thus able to verify the integrity of the intra-luminal mucosa.

To selectively check tenseness of the tensor veli palatini muscle (responsible for the correct opening of the Eustachian Tube [10,11,12]) in patients with ETDS 2a and 3 we developed and applied a bipolar micro-stimulator with a specific micro-electrical wave train and a specially modified nasal electrode. We safely placed it on the anterior Eustachian Tube wall on the TVPM. This procedure was realized under 45^0 rigid optical control. An improvement of middle ear pressure during this test confirmed the lack of any primary paralysis of this essential muscle. All the twenty-seven patients who underwent this test responded positively. This confirms that lack of visible mobility of the TVPM does not dismiss cartilaginous part etiology for chronic Eustachian tube dysfunction and should not be exclusion criteria from surgery. Therefore we do not recommend a stimulation test in the routine LETP screening management.

Between March 1997 and March 1999, thirty-eight patients were selected for this surgical procedure. This group consisted of twenty men and fifteen women from 11 to 57 years of age. In thirty-four patients the chronic Eustachian Tube dysfunction was bilateral and in four it was clearly unilateral. A total of seventy-two Laser Eustachian Tuboplasties LETP were provided in this study. All patients suffered from the chronic Eustachian tube dysfunction symptoms previously described. Twenty-five patients (66 %) also presented recurrent Otitis media or ventilation tube case histories. Twelve LETP belonged to ETDS 1, twenty-one LETP to ETDS 2a, thirty-three LETP to ETDS 2b and six LETP to ETDS 3. In each ETDS operated group the average transmission deafness was analyzed by audiometry. We calculated its mean value between 250 Hertz, 500 Hertz and 1000 Hertz by three measures taken during a period of three months preceding surgery.

In order to conceive a surgical treatment of the cartilaginous part of Eustachian Tube we developed a new endoscopic laser assisted Eustachian Tuboplasty (L.E.T.P.) by using first a CO_2 laser nasal fiber probes and then also diode laser micro fibers (200 Microns). The CO_2 laser or diode Laser beam can improve selective micro-vaporization of the mucosa and the Eustachian tube cartilage with minimal underlying thermal effects. Previous tests associated with histological exams were done on Eustachian Tube cartilages of sheep.

The ambulatory procedure is carried out under general anesthesia and can be done by one-day surgery. After a short decongestion of the nasal cavity with a 5 % adrenaline packing we introduce a 30^0 rigid endoscope through the nasal cavity and advance it to the rhino pharynx until the entire pharyngeal Eustachian tube structures are visualized. The laser fiber used for the treatment is introduced to the operating field in the same way [Figure 4].

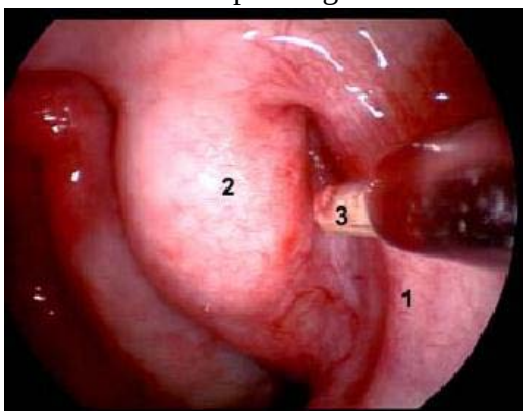


Figure 4: Identification of the left rhino pharyngeal Eustachian tube structures. A preoperative 30^0 rigid endoscopic view. (1) Anterior Eustachian tube wall with the tensor veli palatini muscle (TVPM) from underneath. (2) Posterior Eustachian tube wall with the tubal cartilage. (3) CO_2 laser nasal fiber probe used in the treatment.

Then we introduce a mouth retractor in the oral cavity in order to obtain a secondary access to the operating field. A special designed for LETP or a 90^0-angled double spoon forceps is introduced in this way and brought to the entrance of the Eustachian tube. With the extremity of the closed forceps, we gently palpate the surrounding tubal ostium to evaluate the tissue resistance. The TVPM under the anterior wall must be well identified. Care must be taken to prevent any damage to this area. Remember that the goal of the surgical procedure is to create anatomical conditions to improve the TVPM efficiency. We proceed to posterior overbalance of the cartilage to well visualize the correct axis of the lumen [Figure 5].

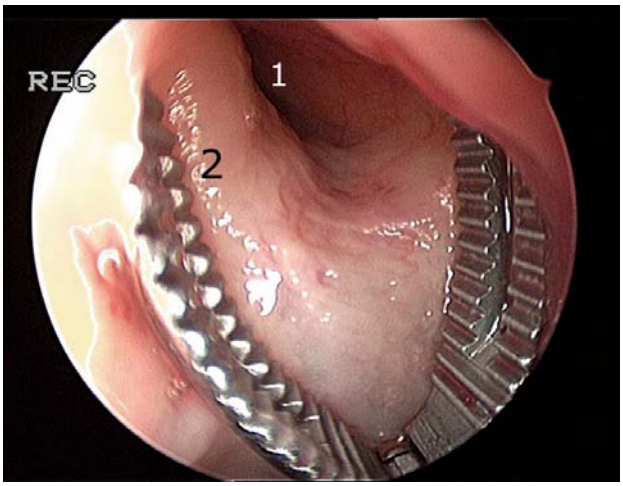


Figure 5: Exposure to the left Laser Eustachian Tuboplasty (LETP). (1) Open Eustachian tube lumen. (2) Posterior wall of the Eustachian tube.

The entrance of the lumen is initially packed with a 10% adrenaline solution, which is left in place for 10 minutes. Then we infiltrate the mucosa of the posterior wall with 2 ml of 1/200'000 adrenaline solution. This initial decongestion allows the borders of the cartilage to be well defined, especially in relation to the anterior wall [Figure 6].

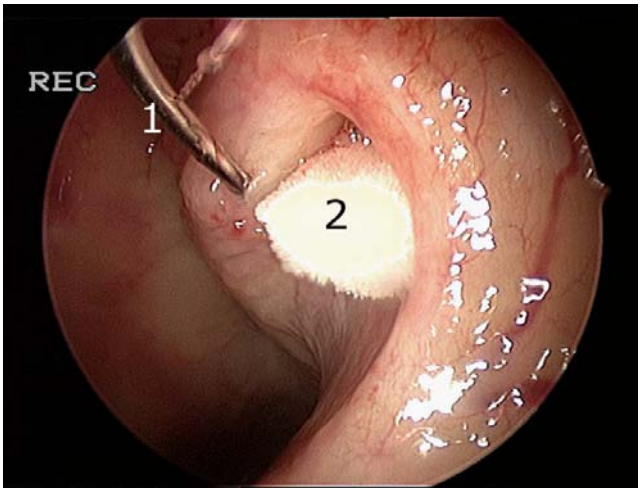


Figure 6: Initial decongestion procedure. (1) 1/200'000 adrenaline solution infiltration of the posterior Eustachian tube wall endo-luminal mucosa with a needle. (2) Packing of the Eustachian tube entrance with a 10% adrenaline solution.

We select Super Pulse waveform for the CO_2 laser and a repeated setting for the diode laser to obtain especially sharp cutting of the cartilage with minimal heating of the underlying structures. We vaporize the posterior wall and the roof of the Eustachian tube progressing slowly to the interior of the lumen. We evaluate the depth of the treated zone as we advance

inside the Eustachian Tube, keeping in mind that the cartilage becomes thinner here. As we progress to the interior of the lumen we use the forceps as an Eustachian Tube retractor [Figures 7,8,9].

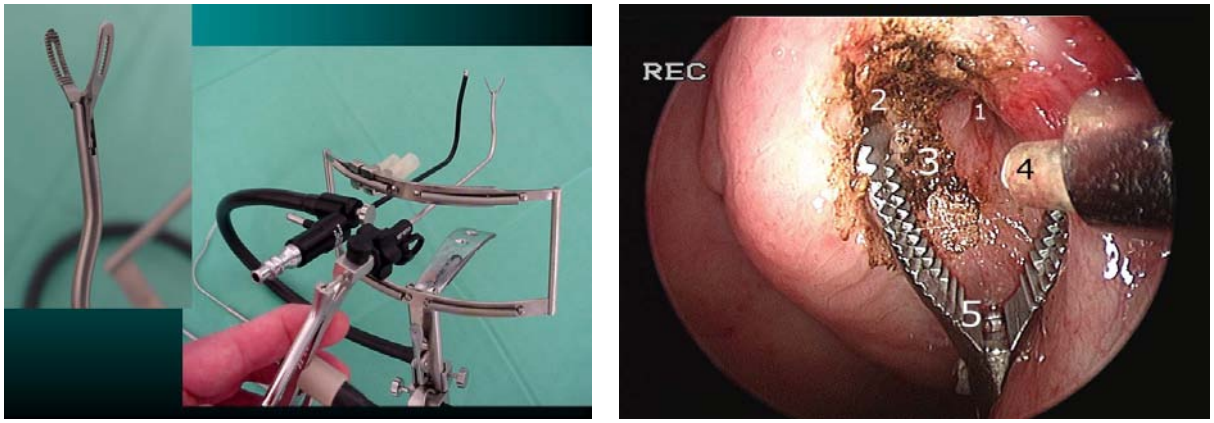


Figure 7: Beginning of a left Laser Eustachian Tuboplasty (LETP). (1) Eustachian tube lumen. (2) Vaporized cartilage of the posterior wall. (3) Vaporized mucosa of the posterior wall. (4) CO_2 laser fiber used in the treatment (1 mm wide). (5) LETP forceps used to open the Eustachian tube lumen.

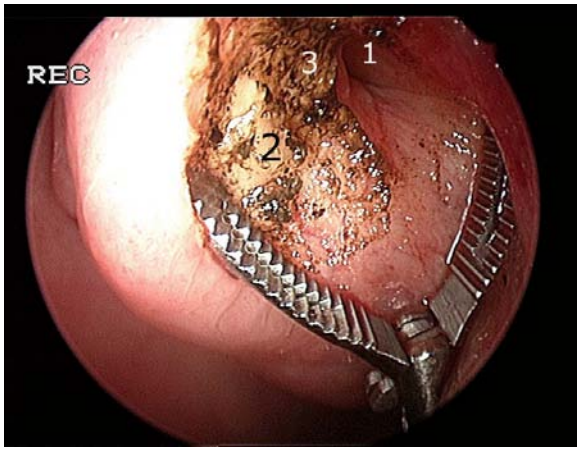


Figure 8: Progression of a left Laser Eustachian Tuboplasty (LETP). (1) Eustachian tube lumen. (2) Vaporized cartilage of the posterior wall. (3) Vaporized mucosa of the posterior wall.

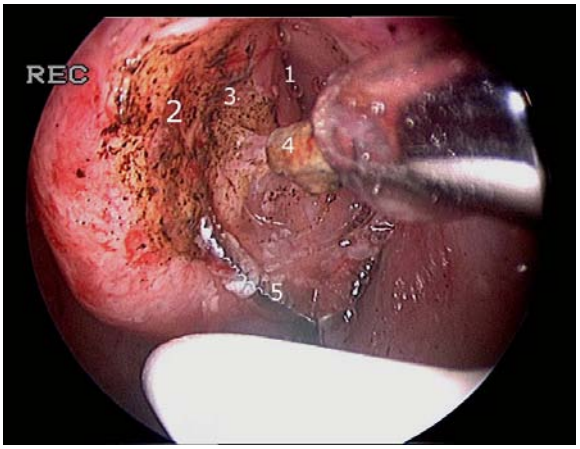


Figure 9: Exposure of the deeper part of the surgical field. (1) Eustachian tube lumen. (2) Vaporized cartilage of the posterior wall. (3) Vaporized mucosa of the posterior wall. (4) CO_2 laser fiber used in the treatment (1 mm wide). (5) the LETP forceps used to open the Eustachian tube lumen.

Figure 10: A transnasal endoscopic view of both freshly operated Eustachian tubes packed with the postoperative sponge STIP by Audio-Technology (Italy) (AST 10415 model LETP)

It may be necessary to change the 30^0 optic to a 45^0 optic for better visualization. In relation to the anatomic structures, a 40^0 optic would be the ideal tool. We do not continue the treatment once a depth of 15mm has been reached. In order to avoid any risk of postoperative synechia we introduce at the end of the surgery an expandable sponge STIP especially designed for the L.E.T.P.[Figures 10]. The maximal lateral expansion with water irrigation is approximately 6-mm and is obtained within one minute. Due to its conic form it is not necessary to suture the STIP to the palate.

A myringotomy should be performed to prevent secondary otitis media. The packing is removed on an ambulatory basis seven to ten days later. In order to keep the tympanic membrane open during this time, the use of OtoLAM [6] seems to be the most appropriate [Figure 11].

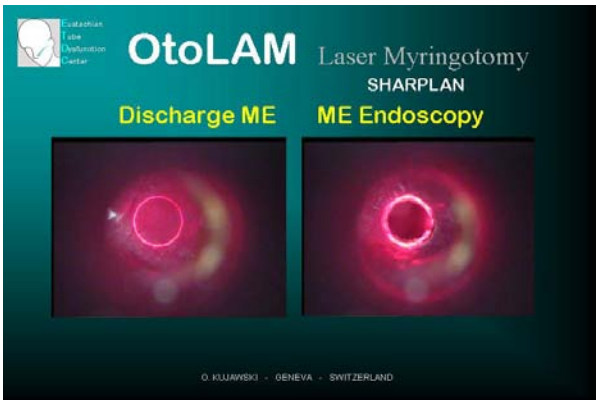


Figure 11: Otoscopic view of a laser assisted myringotomy (OtoLAM) provided in order to discharge the middle ear cavity for the STIP packing period

RESULTS

The follow up period lasts from six to thirty months. No patient left the study during this evaluation period. No hemorrhage was noted following surgery. During surgery cauterization was necessary with bipolar electrocautery in two cases. Repeated packing with a 10% adrenaline solution during the surgery was often done. No antibiotics were prescribed postoperatively. Each patient received Paracetamol for one or two weeks with no stronger analgesic treatment required. Intranasal corticoids were routinely prescribed for three weeks following surgery. The STIP was removed from the Eustachian tube about ten days after surgery. The first twelve patients benefited from standard knife myringotomy rather than a laser myringotomy at the end of the procedure. Six of them needed a secondary knife myringotomy under local anesthesia because of too rapid tympanic membrane healing during the first ten days following the surgery associated with middle ear pressure drop. Only one tympanic membrane did not close after Eustachian tube healing. A very small fibrin deposit at the entry of the treated Eustachian tubes zone was noted during the first two weeks following the removal of the STIP. Normal rhino pharyngeal status was observed after an average of 6 weeks following the surgery. Preoperative and postoperative biopsies of the proximal Eustachian tube mucosa were done. In all cases the new mucosa showed a normal pseudo stratified epithelium with less inflammatory cells and more fibrosis in the chorion than before surgery. No secondary otalgia was reported. Thirty-five patients complained of a sore throat during two to three days following surgery. None of the treated patients presented a postoperative patulous Eustachian tube.

According to the patients a subjective improvement of pre-operative complaints was noted after an average of two weeks. The initial deafness was reduced in 27 patients (71 %), remained the same in 10 patients (26,3 %) and worsened in 1 patient (2,7 %). The initial

tinitus was reduced in 23 patients (60,5 %), remained the same in 13 patients (34,2 %) and worsened in 2 patients (5,3 %). Recurrent otalgia, often accompanied by vertigo, was reduced in 33 patients (86,8 %) and remained the same in 5 patients (13,2 %), [Figure 12]. None of the treated patients complained of emphasized otalgia.

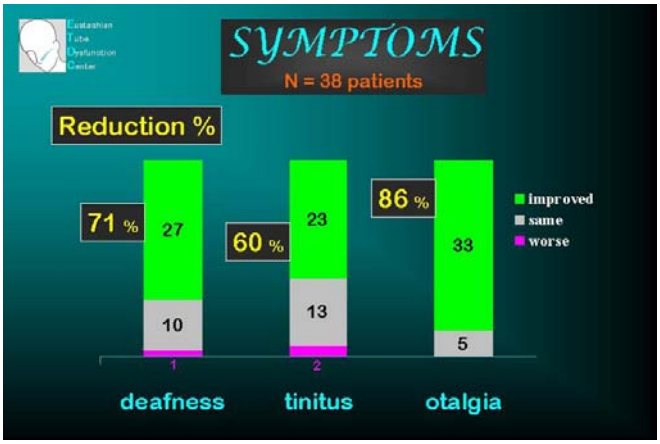
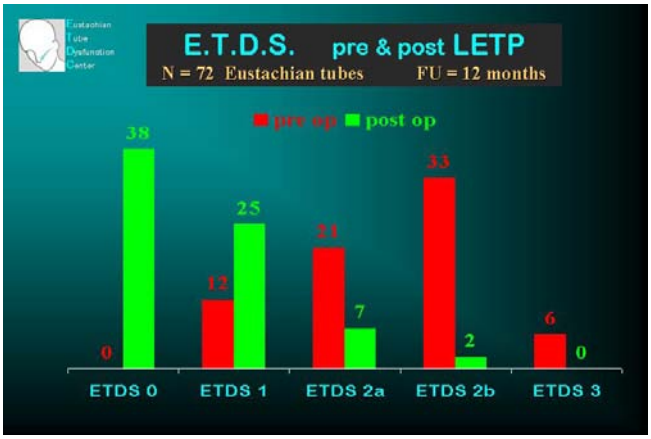


Figure 12: Graph showing the comparison of the three main symptoms (deafness, tinitus, otalgia-vertigo) indicated by the patients before and after the surgery



In each ETDS operated group the average transmission deafness was analyzed by audiometry. We calculated the average postoperative transmission deafness using the same criteria as the pre-operative one with three measures taken during a period of three months following the surgery. A hearing gain was noted in all groups, [Figures 13,14]. Analysis shows that the best results (65 % of gain) were obtained with the surgery in the ETDS group 2b.

After the surgery, 9 patients (24 %) of the 38 operated patients occasionally used topical endonasal corticoids during acute upper respiratory track infections or during an allergic reaction, keeping their Eustachian tube function in a physiologic state, which was impossible before surgery. None of them uses the topical treatment permanently.

Until now no one has presented tympanic membrane atelectasis or otitis media. None of the 25 patients (66 %) who also presented recurrent otitis media or ventilation tube case histories experienced a recurrence after surgery.

We noted a significant reduction of tympanic membrane atelectasis after surgery. It was evaluated with the Pars Tensa atelectasis grade of Sadé [5].

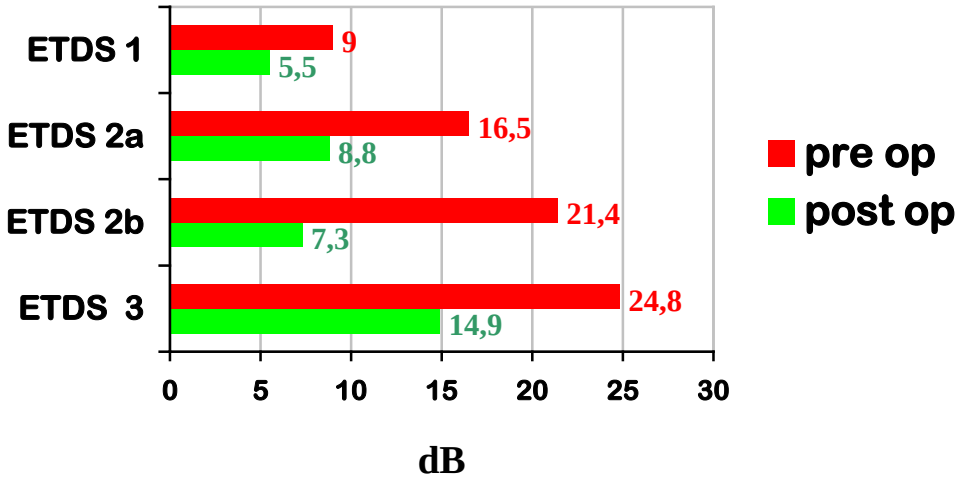


Figure 13:Graph showing the average transmission deafness for each ETDS group. We calculated its mean value between 250 Hertz, 500 Hertz and 1000 Hertz by three measures taken during a period of three months preceding surgery for the preoperative value and a period of three months following surgery for the postoperative value.

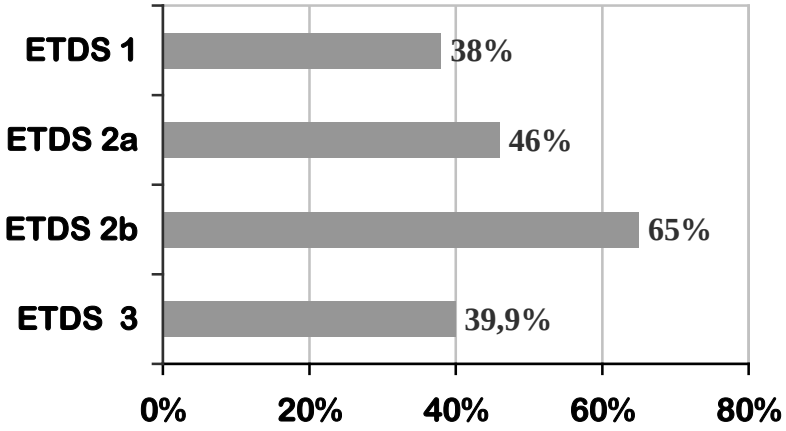


Figure 14: Graph showing the postoperative average hearing gain for each operated ETDS group.

DISCUSSION

The Laser Eustachian Tuboplasty (L.E.T.P.) consists of transnasal endoscopic laser microsurgery of the Eustachian tube. The CO_2 and diode laser technology allows a char free procedure without significant complications. Thirty-eight patients suffering from chronic Eustachian tube dysfunction underwent this new procedure. Prior to surgery all complained of deafness, tinitus and otalgia. Vertigo was often associated with the otalgia. In majority of cases these symptoms were improved with the surgery.

Pre and postoperative audiometry showed a hearing gain due to decrease of the transmission deafness in all tested groups. We noted better results in the ETDS 2b group. The lack of luminal aperture noted in this selected group can be correlated to the mucosa congestion or hypertrophy. The majority of the patients in this group suffered from chronic rhinitis. A relevant increase of the Eustachian tube lumen provided by the laser might explain the better results noted in the ETDS 2b. Improvement also noted in the other groups confirms

the correlation that exists between pathological Eustachian tube function and clinical symptoms associated with a middle ear pressure drop.

However 24 % of operated patients occasionally used topical endonasal corticoids during acute upper respiratory track infections or during an allergic reaction to keep their Eustachian tube function in a physiologic state. None of these patients responded to this treatment before the surgery. However none of them uses the topical treatment constantly.

The intra luminal endoscopy of the cartilaginous segment of Eustachian Tube was routinely carried out under local anesthesia with a 1.9-mm fibro-endoscope. We were thus able to verify the integrity of the intra-luminal mucosa. It is interesting to note that during this endoscopy eight patients indicated a homolateral sore throat. None of them complained of otalgia. The sore throat was localized at the base of the tongue and lasted about ten minutes. We also noted that the majority of operated patients complained of sore throat for two to three days following surgery. The relationship between the lingual branch of the glossopharyngeal nerve localized in the lateral tongue base and post tonsillectomy otalgia was evoked [22]. Both observations might be correlated by further studies. Total Eustachian tube endoscopy associated with middle ear exploration was described in the literature using a 0.9-mm fibro-endoscope [23]. There was no correlation between endoscopic findings and middle ear pathology. In addition, middle ear investigation was not a part of our objective. Therefore, we did not retain this procedure in our study.

Five of the twelve patients who were divers were able to resume their sport postoperatively without complications. Furthermore, general diving security appears to be enhanced through this technique.

This new procedure can be performed by one-day surgery. No significant morbidity or complication occurred either during or following surgery. If it is performed with both our patients selection and technical criteria it seems to be safe and easy. However previous training on cadavers or courses attendance in our medical center is recommended.

In conclusion, The LETP is indicated in chronic Eustachian Tube dysfunction as it reduces transmission deafness, tinitus and recurrent otalgia. None of the 25 patients (66 %) who also presented recurrent otitis media or ventilation tube case histories recurred after surgery. This reduction of recurrence of otitis media with effusion that was also observed in our study seems to confer to this surgery a new prophylactic approach in order to prevent this common middle ear pathology. This new one-day surgery seems to be safe and easy. It may be applied in the future to wider indications, such as treating otologic complications of rhino-pharynx surgery or congenital deformity, and reducing middle ear surgery failures related to poor Eustachian tube function. By enhancing middle ear ventilation it may be associated in the treatment of Ménière's Disease that responds to myringotomy [24].

The diode laser is now routinely applied to the LETP but was not considerate in this present study. Comparing with the CO_2 laser the diode laser offers a better hemostatis control. Our first comparative study shows a faster healing with the diode laser. The flexibility and the fineness of the diode fibers allows us to conceive less invasive surgery [Figure 15].

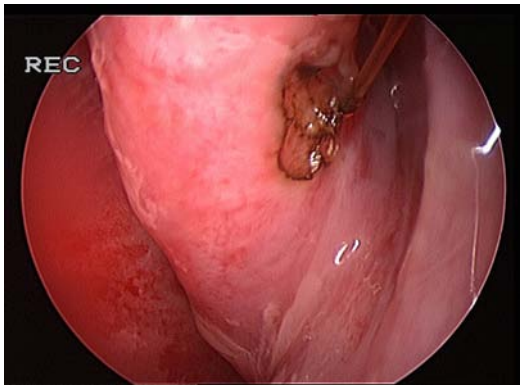


Figure 15: Left LETP with a 200µ diode laser fiber (CeramOptec).

It also enabled us to operate some younger patients suffering from chronic otitis media resistant to any standard conservative treatment and conventional surgery as adenoidectomy, OtoLAM or ventilation tubes [Figure 16].

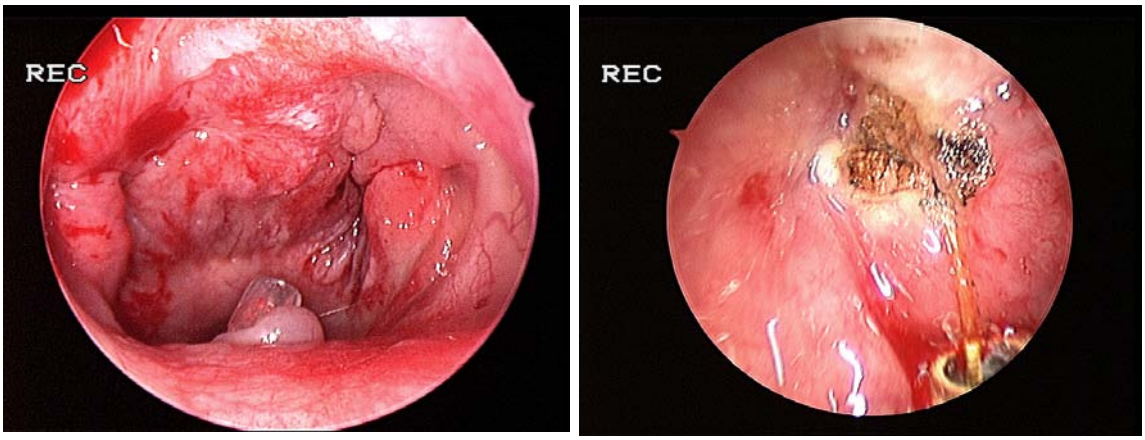


Figure16: LETP on a 3 years old of age boy

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ORIGINAL PAPERS

RADIATION THERAPY OF SQUAMOUS CELL CARCINOMA OF PALATINE TONSIL WITH EMPHASIS ON SOME PROGNOSTIC FACTORS.

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ABSTRACT

Sixty-four patients were managed in the ENT Department and Radiation Oncology Departments, Assuit University Hospitals from October 1997 to February 2001 for previously untreated squamous cell cancer of the tosillar region. All patients were treated with curative intent with continuos course of radiotherapy. Tonsillectomy was done to 46 patients as excisional biopsy and surgical treatment. Patients managed with combined surgery in the form of tonsillectomy and radiation therapy achieved 3 years survival rate better than those managed with radiation therapy alone (89.1% Vs 16.6%). T1 and T2 patients achieved better 3 years survival (90% &84.6%). Overall 3 years survival rate was 68.75%. Cervical lymph node involvement at presentation worsened the prognosis. Patients with no palpable lymph node had 100% cure rate while those with N1 had failure in 12.5% of patients. Failure increased to 43.8% in N2 patients.

Tumor size had significant correlation to both local recurrence and lymph node recurrence. Excisional biopsy (tonsillectomy) patients achieved complete cure and better survival than punch biopsy patients did. Age had insignificant impact on survival and recurrence. Differentiation of squamous cell carcinoma was insignificant impact on survival and response. Tonsillectomy should be combined with radiation in treatment of squamous cell carcinoma of palatine tonsil as debulking procedure particularly in small tumors T1 and T2.

INTRODUCTION

Carcinoma of the tonsil is the third most common malignancy of the head and neck after thyroid and laryngeal cancers. Frisch et al., 2000 found the incidence of tonsillar squamous cell carcinoma increased fourfold among white women in Connecticut during 1945-1994 but remained rather constant in white men.

Squamous cell carcinoma or one of its variant accounts for 95% of malignant lesions while malignant lymphomas accounts for about 5 % of tonsillar malignancies. Minor salivary gland malignancies, plasmacytoma and other rare tumors make up the remainder.

The management of tonsillar carcinoma remains controversial and without a uniform consensus. Wang et al., 1995 considered that ipsilateral radiation therapy remains the treatment of choice for squamous cell carcinoma of faucial tonsill. Jacson et al., 1999 conclud that that ipsilateral radiation treatment of patients with carcinoma of the tonsil gives survival rate results that are at least as good as those reported wit bilateral radiation treatment wit fewer side effects and a very low risk of failure in contralateral neck. Antonello et al., 1998 concluded that irradiation alone yields fairly good result in early tonsil carcinoma, while the surgery-irradiation combination should be preferred in large tumors. Mendenhall et al., in 2000 preferred radiation therapy for squamous cell carcinoma of the tonsillar region and considered it an alternative to surgery. They concluded that radiation therapy alone or combined with a planned neck dissection provides cure rates that are as good as those after

surgery and is associated with a lower rate of severe complications. Many authors considered radiotherapy and surgery are equally efficacious treatments for early stage tonsillar cancer and a combination of the two modalities is the standard of care for patients with advanced disease.

The aim of this study was to evaluate the results of treatment of squamous cell carcinoma of palatine tonsil with either radiotherapy alone or combination of surgery in the form of tonsillectomy and postoperative radiation. Taking in consideration different prognostic factors as tumor size (T), lymph node involvement, age, smoking habits and differentiation of the tumor.

PATIENTS AND METHODS

Sixty-four patients were studied and followed up in the ENT Department and Radiation Oncology Departments, Assuit University Hospitals from October 1997 to February 2001 for initial treatment of squamous cell cancer of the tosillar region. This group consisted of 37 males and 27 females. Their age ranged from 13 years to 75 years. The patients were divide into three age groups (1=<40 years, 2=between 40 and 60 years, 3=>60).

Staging procedure

Patients were staged according to the classification of American Joint Committee on Cancer (AJCC) by physical examination, indirect laryngeal examination and under general anesthesia for whom tonsillectomy was planned. Primary tumor (T): where Tis carcinoma in situ, T1 tumor 2cm or less in greatest diameter, T2 tumor more than 2 cm but less than 4 cm in greatest diameter, T3 tumor more than 4 cm in diameter T4 massive tumors more than 4 cm with invasion causing tongue fixation, eroded bone, causing trismus or extended into the soft tissue of the neck.

Imaging

Computerized tomography (CT) was done to all patients from the level of the nasopharynx to the lower neck. Axial sections made should be parallel to the infraorbital meatal line or the hard palate. Contiguous 3mm sections should be used through the primary site and the neck. CT should be done before biopsy.

Biopsy Technique

Biopsy was done to all patients to establish the diagnosis and was examined histopathologically. Punch biopsy with cupped forceps was carried out using local anesthesia in the sitting position to 18 patients who refused surgery and or had anaesthetic problem. Those patients constituted the radiation therapy group alone.

Tonsillectomy of the whole-involved tonsil with dissection technique was done to 46 patients under general anesthesia with endotracheal tube. Those constituted the combined surgery and radiation group. Histopathological examination of the whole specimen was done.

Radiation Therapy

Patients of both groups were treated with curative intent with continuos course of once daily. Radiation therapy was administrated to all 64 patients by using Cobalt 60 external beam irradiation unit with treatment distance of 80 cm to the skin (SSD) (source skin distance). The standard treatment consists of two lateral fields including primary tumor while patient in supine position and the machine rotates 900 on both sides. The upper border of the lateral field was the zygomatic arch. Anterior border was 2cm beyond any clinical evidence of disease. Lower border was at the thyroid notch, while the posterior border covers the posterior cervical lymph node. The tumor dose ranged from 60Gray to 70 Gray in 6 to 7 weeks (200 CGray per fraction and five fractions per week). After 4500 Cgy tumor dose the posterior border of the lateral port is shifted anteriorly to the middle part of the vertebral bodies to spare

the spinal cord. The lower neck field was treated with the standard anterior split neck field aiming at dose of 5000 CGY in five weeks in 25 fractions.

Follow up

Patients were reassessed clinically after one month to evaluate response and local control. Response of the patients was divided into complete response (CR) and partial response (PR). Complete response denotes complete cure with no residual. Partial response denotes residual disease after complete course of radiotherapy.

All patients were followed for a minimum of 2 years, until death or recurrence. No patient was lost to follow up. Local and or lymph node recurrences were detected during the follow up period. Local recurrence was detected by clinical examination and confirmed by punch biopsy under local anesthesia. Complications of treatment were determined during the follow up.

Statistics

Responses of the patients of this study were correlated to type of the biopsy, tumor size at time of diagnosis, age, smoking habit and cervical lymph node involvement. Multivariate analysis using Kaplan-Meier method was used. Significant levels among the curves were determined according to Chi square.

RESULTS

Sixty-four patients were treated in the ENT department and Radiation oncology departments, Assuit University Hospitals from October 1997 to February 2001 for previously untreated squamous cell cancer of the tosillar region. All had squamous cell carcinoma. They were 37 men (57.8%) and 27 women (42.2%) (table1). Their age ranged from 13 years to 75 years. 25 patients (39.1%) were 40 years old or less, while 21 patients (32.8%) aged 40-60 years old. Only 18 patients (28.1%) aged above 60 years (table1). 32 Patients were cigarette smokers (50%), while the other half were non-smokers (table1).

Table 1:Patients criteria:

SEX		
	Patients, n	**%**
Men	37	57.8
Women	27	42.2

Age groups		
<40 year	25	39.1
40-60 year	21	32.8
>60 year	18	28.1

Smoking habit		
	Patients, n	**%**
Smokers	32	50.0
Non-smokers	32	50.0

Staging

According to tumor size (T) patients were staged as follows:

T1 20 patients (31.3%), T2 26 patients (40.6%), T3 13 patients (20.3 %) & T4 5patients (7.8%) (table2).

Table2: Tumor size (T)

	Patients, n	**%**
T_1	20	31.3
T_2	26	40.6
T_3	13	20.3
T_4	5	7.8
Total	164	100.0

24 patients (37.5%) had no cervical lymph node involvement (N0) at time of diagnosis, while Cervical lymph node involvement was detected in 40patients (62.5%). 24 patients of them had N1 (37.5%) while 16 patients had N2 (25%) (table 3).

Table 3: Lymph node involvement (N):

	Patients, n	%
N_0	24	37.5
N_1	14	37.5
N_2	16	25.0
Total	64	100.0

Biopsy

Excisional biopsy by tonsillectomy was done in46 patients (71.9%), while simple punch biopsy was done in 18 patients (28.1%) (table4). No difficulties were encountered during the dissection technique of tonsillectomy except in one advanced lesion, which could not be excised completely. In all patients who underwent tonsillectomy no significant bleeding. No recorded reactionary nor secondary hemorrhage.

Table 4: Type of biopsy

	Patients, n	%
Punch biopsy	18	28.1
Excisiona	46	71.9
Total	64	100.0

Complete response (CR) was achieved in 54 patients (84.4 %), while partial response (PR) was achieved in ten patients (15.6 %) (table5). Local recurrence during follow up was detected in ten patients out of 54 with CR (18.6%), while lymph node recurrence was detected in 11 patients (17.2%) (tables 6&7). Overall 3 years survival was 68.75%.

Table 5: Response (partial recovery (PR) & complete recovery (CR):

	Patients, n	%
CR	54	84.4
PR	10	15.6
Total	64	100.0

Table 6: Local recurrence

	Patients, n	%
No recurrence	44	81.5
Recurrence	10	18.5
Total	54	100.0

Table 7: Lymph node recurrence

	Patients, n	%
No recurrence	53	82.8
Recurrence	11	17.2
Total	64	100.0

Response and Survival

All 46 patients who underwent combined tonsillectomy and radiation therapy achieved complete response (CR). Only eight patients who underwent punch biopsy and radiotherapy alone achieved complete cure out of 54 who achieved complete cure (14.8%). All patients who had recurrence (partial response) underwent punch biopsy (table8 & figure 1). Patients managed with combined surgery (tonsillectomy) and radiation therapy achieved better survival rates as shown in table8, 9&figure 3.

Table 8: Response of combined and radiation groups:

Treatment		Response		Total
		Complete	Partial	
Radiation	Patients, n	8	10	18
	%	44.4	55.6	100.0
Combined	Patients, n	46		46
	%	100.0		100.0
	Patients, n	54	10	64
	%	84.4	15.6	100.0

Table 9: Survival rates for combined therapy and Radiotherapy alone:

Treatment		Survival	Recurrence	Total
Radiation only	Patients, n	3	15	18
	%	16.6	83.3	100.0
Combined	Patients, n	41	5	46
	%	89.1	10.9	100.0
Total	Patients, n	44	20	64
	%	68.75	31.2	100.0

Prognostic Factors

Smoking was found to have no correlation to neither tumor size nor survival as P value =0.182. **Tumor Size:** T1 and T2 patients achieved better 3 years survival (figure1).

All T1 patients achieved complete response (100%). 24 patients out of 26 (92.3%) belonging to T2 group patients achieved complete response. Only seven patients out of 13 patients (53.8%) of T3 achieved complete response. As regard T4 patients only three out of five achieved complete response (table 10).

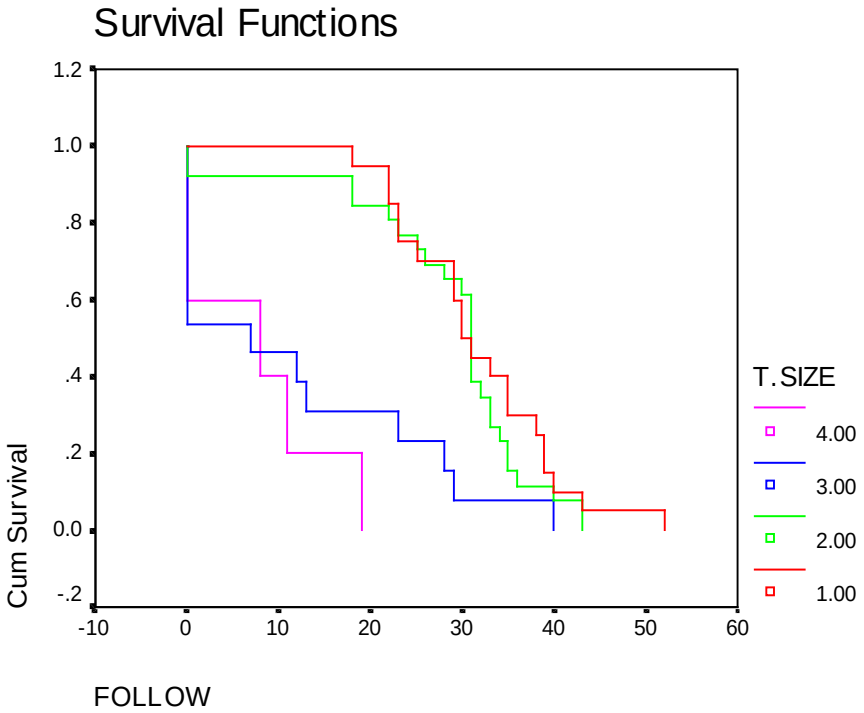

Figure1: shows survival of different tumor sizes (T)

Table 10: Relationship between tumor size and response

T stage		Response		Total
		Complete	Partial	
T_1	Patients, n	20		20
	%	100.0		100.0
T_2	Patients, n	24	2	26
	%	92.3	7.7	100.0
T_3	Patients, n	7	6	13
	%	53.8	46.2	100.0
T_4	Patients, n	3	2	5
	%	60.0	40.0	100.0
		54	10	64
		84.4	15.6	100.0

Three years survival rate for T_1 patients was 90% while that for T_2 group patients was 84.6%. Data correlating 3 years survival and tumor size were shown in figure 2 and table11. Local recurrence and its correlation to tumor size were shown in table11.

Table 11: Relation between tumor size and local recurrence

Tumor size		No recurrence	Local recurrence	Total
T_1	Patients, n	18	2	20
	%	90.0	10.0	100.0
T_2	Patients, n	22	2	24
	%	91.6	8.4	100.0
T_3	Patients, n	3	4	7
	%	42.8	57.2	100.0
T_4	Patients, n	1	2	3
	%	33.3	66.7	100.0
		44	10	54
		81.4	18.6	100.0

*** P=0.101**

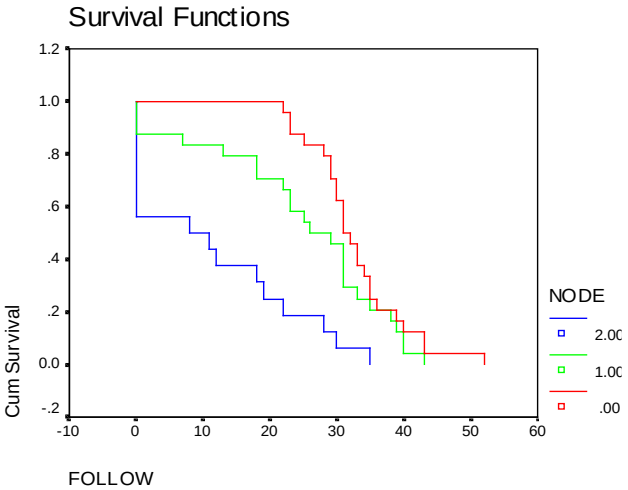

Figure 2: Shows survival of different node stages (N).

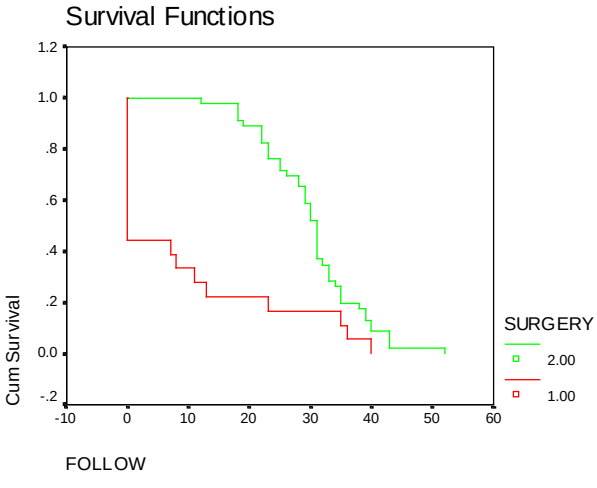

Figure 3: Figure 3: shows survival of combined therapy and RT alone

Patients without cervical nodal involvement showed better 3 years survival and better response than those had cervical nodal involvement at time of presentation did (table12

&figure2). N_1 patients had better 3 years survival and response than N_2 patients (table12) did.

Table12: Correlation between lymph node involvement and response

		Response		Total
		CR	PR	
N_0	Patients, n	24		24
N_0	Patients, n	24		24
	%	100.0		100.0
	%	100.0		100.0
N_1	Patients, n	21	3	24
N_1	Patients, n	21	3	24
	%	87.5	12.5	100.0
	%	87.5	12.5	100.0
N_2	Patients, n	9	7	16
N_2	Patients, n	9	7	16
	%	56.3	43.8	100.0
	%	56.3	43.8	100.0
Total	Patients, n	54	10	64
Total	Patients, n	54	10	64
	%	84.4	15.6	100.0
	%	84.4	15.6	100.0

Age had no impact on survival as p=0.234 (figure 4). **Differentiation of squamous cell carcinoma** showed statistically insignificant impact on survival and response, as p value was 0.186 (table13). Well-differentiated and moderately differentiated squamous cell carcinoma showed better response and survival than poorly differentiated squamous cell carcinoma (figure5); however this was statistically insignificant.

Table13: Correlation between tumor differentiation and response

Grading		Response		Total
		CR	PR	
Well differ.	Patients, n	23	6	29
	%	79.3	20.7	100.0
Mod differ.	Patients, n	21	1	22
	%	95.5	4.5	100.0
Poorly differ.	Patients, n	9	3	12
	%	75.0	25.0	100.0
	Patients, n	53	10	63
	%	84.1	15.9	100.0

DISCUSSION

This study demonstrates the experience in Assuit University Hospitals in management of squamous cell carcinoma of palatine tonsil. The overall 3 years survival rate was 68.75%. This was very close to Korashi et al.'s study in 1998 (66.7%)12 and El-shennawi et al.'s study in 198913. Both studies were done in Cairo University. This is better than the overall determinate three-year survival cure rate of Spiro and Spiro (1989) 14. Their overall determinate three-year cure rate was 51%. In University of Florida the overall local control rate was 76% 8. Local control rate in this study was compared with that of other centers (table 14). Local tumor control was less in previous studies because radiation therapy was given in low doses using antiquated equipment and treatment techniques were inadequate.

Table 14: Survival rates in different centers:

Institution	Patients, n	T_1	T_2	T_3	T_4	Overall
Institut Curie, Paris, France[16]	465	90%	84%	64%	47%	64%
M.D.Anderson Cancer center[15]	150	94%	81%	67%	63%	75%
UF , Gainesvelle, FL, USA[8]	400	83%	81%	74%	60%	76%
Memorial Sloan-Kettering Cancer centre, New York[14]	117	89%	83%	58%	49%	69.5%
Radiotherapy Cancer center[12]	36	85%	85%	54.4%	54.4%	66.7%
This study	64	90%	84%	47.5%	53.8%	68.75%

Tumor size was shown in this study to have significant correlation to both local recurrence and lymph node recurrence. Wong and associates reported the M.D. Anderson Hospital local control rates for 150 patients with squamous cell carcinoma of the tonsillar

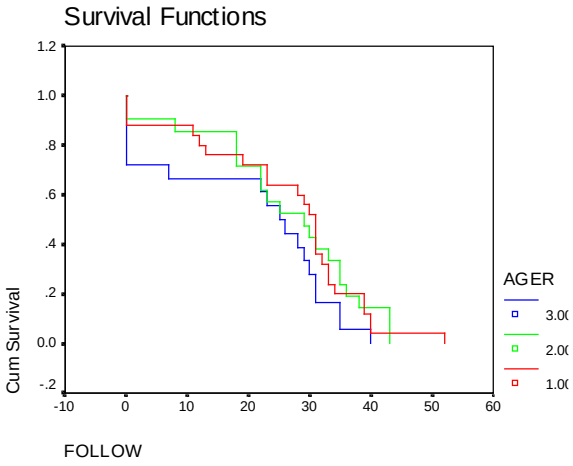

Figure 4: shows survival of different age groups.

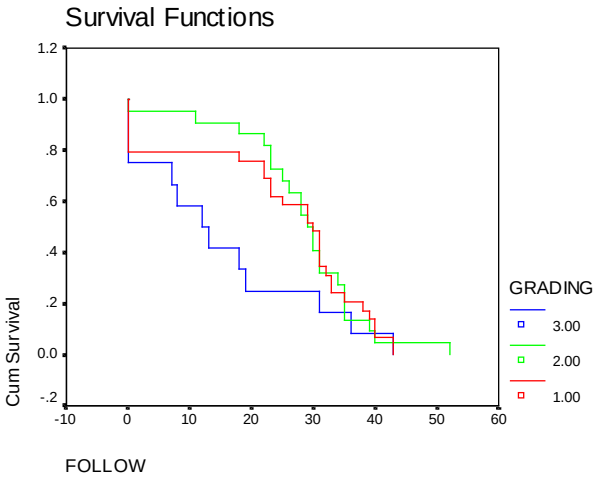

Figure 5: shows survival of different tumor differentiation

fossa as follows: T1, 94%; T2 79%; T3 58%; and T4 50% 15. The incidence of neck recurrence was approximately doubled in those patients presenting with T1- T2 primary lesions in comparison with that of T3 or T4 carcinoma when the primary was controlled 16. Mendenhall et al., in 2000 reported five -years rates of local control as follows: T1 83%; T2 81%; T3 74% and T4 60%. This lower control rate reported by Mendenhall et al., 2000 can be attributed to the their longer follow up period which was five years and not three.

Patients who managed with combined surgery (tonsillectomy) and postoperative radiotherapy were found to have better survival rate than patients managed with radiotherapy alone (89.1% Vs 16.6%). This is shown in table 8&9 &figure1). All 46 patients who underwent tonsillectomy and postoperative radiation achieved complete cure (CR). No recurrence occurred in those patients who underwent tonsillectomy and postoperative radiotherapy. Only eight patients who underwent radiation alone achieved complete cure out of 54 who achieved complete cure (14.8%). All patients who had partial response underwent radiotherapy alone (table 8& figure 1). This denotes that tonsillectomy should be integral part and should be combined with radiation in treatment of squamous cell carcinoma of palatine tonsil as debulking procedure and not only as excisional biopsy. Some authors recommended Transoral

excision of tonsillar cancer[3,17]. This was only limited to early cancer and Gluckman and Thompson, 1991 performed tonsillectomy only for squamous cell carcinoma apparently limited to the tonsil[17]. They interpreted this as debulking procedure and warned about opening planes for further spread. Hicks et al., 1998 found that there were no contralateral recurrence in the radiation group, while 43% of the regional failures in the surgery alone group were in the contralateral neck[11]. This confirms the results in this study that combination of tonsillectomy and postoperative radiotherapy is the treatment of choice of palatine tonsil cancer. This also support the consumption that the palatine tonsil is part of certain specific system which is Waldeyer's ring (Mokhtar, 2001).

This study also demonstrates that **cervical lymph node involvement** at presentation worsened the prognosis. Patients had no lymph node involvement had 100% cure rate while those with N1 had PR in 12.5% of patients. This was increased to 43.8% in N_2 patients (table 12 & figure2). Korashi et al., considered the nodal status is the only factor significantly affecting both treatment response and disease free survival. Million et al., 1994 found that the control rate for patients with a clinically negative neck was 33 out of 34[3].

Among 25 patients with tonsillar malignancy Beaty et al., in 1997 identified ten (40%) as smokers. They considered tobacco smoking was significantly associated with the diagnosis of malignancy ($P<0.05$)[18]. **Smoking** was found in this study to have no correlation to neither tumor size nor survival as P value =0.182.

Younger patients had slightly better prognosis than older patients did. Age had insignificant impact on survival and recurrence. Differentiation of squamous cell carcinoma showed statistically insignificant impact on survival and response, as p value was 0.186 (table13). Well-differentiated and moderately differentiated squamous cell carcinoma showed better response and survival than poorly differentiated squamous cell carcinoma (figure 5); however this was statistically insignificant.

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SANATION SURGERY IN CHRONIC SUPPURATIVE MESOTYMPANITIS

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ABSTRACT

Intraoperative findings and histological investigations of the adito-antral region in 185 patients with chronic suppurative mesotympanitis have shown, that in 76% cases the blockade of the aditus was evidcut, and in 72% cases there was an inflamuafory-destructionary process in the bone tissue. Therefore the choice of technique of surgery was depending on the findings during operation.

Endaurally each operation started with an inspection of the tympanic cavity. The revision of the autrum and aditus was performed beginning from the posterior wall of the external auditory meatus. In blockade of the aditus cases its microsurgery was done. If the suppurtive process involved the bone tissue of the adito-antral region an osteoplastic procedure was made; both the trapanic cavity and latero-antral massive were processed by the law-band ultrasound. Observation on operated 153 patients (from 3-6 months till 10 years) showed, that good sanatioinary effect was achieved in 139 cases (89%).

The methods of surgical treatment of patients with chronic suppurative mesotympanitis (CSM) are different. They differ by volume of revision of middle ear cavities and by the number of stages of surgical intervention as well. Some authors (1, 2, 3, 4) only do the revision of tympanic cavity with consequent myringoplasty and the restoration of ossicular chain if necessary.

Wulstein (5) does tympanoplasty of 1 type to the patients with *pars tensae* perforation and kept ossicular chain using the method of upper and lower control of *cavum tympany* and control of aditus.

Meanwhile, clinical observations of number of authors (6, 7, 8, 9, 10, 11) prove the possibility of existence of the focus of chronic inflammation in adito-antral area in patients with CSM. Taking this condition into account some otosurgeons (12, 13, 11) form antrodrainage with the aim of sanation. As the next step these authors do plastic hearing-improving surgery.

Tsuckerberg, Lukyanova (14) at the same time add myringoplasty to antrodrainage in order to prevent postop infection of *cavum tympany* through *external meatus*. According to Tarasov at all (10) antrodrainage is convicted to fail in case of blocking of aditus, which according to the data provided by several otosurgeons (15, 16, 10) is observed in 80-85% of patients with chronic suppurative otitis media. Taking this fact into account, in case of blocking of aditus in patients with CSM Mishenkin (17) adds microsurgery of aditus to the antrodrainage surgery. Furthermore, whenever spreading of caries process on bone of adito-antral cavity is found, Mishenkin at all; 1974 (8); Mishenkin, 1986, 1999 (17, 18) does osteoplastic mesotympanotomy. The existence of different methods of surgical treatment of the patients of this category, evidently, is conditioned by different opinions about the character and the level of spreading of pathological process in middle ear cavities of these patients, particularly about the existence of blocking of aditus and the changes of bone tissue of adito-antral cavity.

Histological investigations on CSM which we conducted on 100 out of 185 patients whose conservative treatment turned out ineffective, showed the following: the morphological substrate of the aditus block is fibre tissue of different stage of maturity, tympanosclerotic plates, cholesterol granuloma. Also, in *mucosae* of antrum and of periantral cells, cataral and sclerotic changes take place. Histological investigations of the bone tissue of the “bridge” under aditus, periantral cells, antrum walls, showed the signs of chronic osteitis of different stages of expression in 70-72% of cases. Taking this fact into account, we should think that

the conservative treatment of these patients is not reasonable, they are assigned to surgical intervention. The choice of the method of surgery depends on the stage of spreading of the caries process in middle ear cavities.

When conducting sanation surgeries on patients with CSM, we stick to "closed" method, supposing preservation of posterior bone wall of *external meatus* and retrotympanic bone-airy area in mastoid communicaing with *cavum tympany.* Directed by Mishenkin's assignments 1986, 1999 (17, 18), we find it reasonable to start every surgical intervention with microsurgery of *cavum tympany* in patients with CSM. The spreading of pathological process is mostly determined on the basis of intraoperational diagnosis.

In order to perform revision of *cavum tympany* and aditoantral cavity, we have worked out endoaural approach considering it preferable to intrameatal one (Fig 1). The main incision by Heermann (19) is added by semicircular incision of *external meatus* located 9-10 mm externally from *membrana tympani* reaching the projection of antrum.

Under the optic control meatotympanic flap is formed and pushed forward (Fig 2). The bone of lateral wall of attic and that of the posterior wall of *external meatus* are partly removed.

During the revision of *cavum tympany* the webs, granulations, polips are removed

Fig.1 Modified endoaurally approach

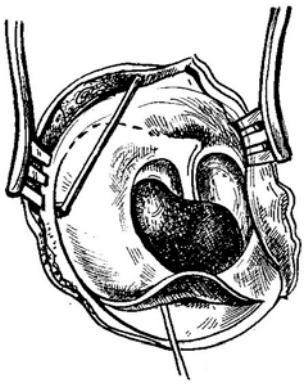

Fig.2 Meatotympanic flap is formed and pushed forward

maximally preserving the healthy *mucosae, incus* altered because of caries or its remainders blocking aditus being removed. The revision of labyrinth windows, *sinus tympany* Eustachian tube is done. The patency of aditus from the side of *cavum tympany* is restored after the pathological tissues are removed.

Revision of aditus and antrum is done from the side of posterior bone wall of *external meatus*. For this purpose, the bone is drilled in Wolf's point - 3-4 mm inside from *spina Henle* (Fig 3). The possibility of patency of aditus is determined by the apperance of the liquid in cavum tympany after filling its opening with moderate pressure of saline. If aditus is not blocked and liquid appears in *cavum tympany*, meatotympanic flap is put on its own place and the surgery is over. In case of blocked aditus the hole in the anterior wall of the antrum is enlarged until the short crus of *incus* becomes visible.

All pathologically changed tissues are removed, possibility of aditus patency is restored. The healthy *mucosa* is maximally preserved. Polyethylene tube is placed into the adito-antral cavity for drugs installation. Meatotympanic flap is put back to its original place.

In case of spreading of caries process into adito-antral cavity and the existence of blocking of aditus we do osteoplastic intervention (17). For this purpose lateroantral bone massive is approached. After wide opening of antrum, thinning of the "bridge" and opening of attic in posterior parts, the cleaning procedure is done: bone cavity is cleaned from caries. ¾ of this cavity volume is filled with antiseptic solution and is processed by low-frequency

ultrasound. The bone channels in the walls of the antral cavity where antimicrobial preparation makes a "depo" are being penetrated, and cleaned by the flow of antimicrobial solution. Moreover, actual bacteriocidal effect of low-frequency ultrasound improves the cleansing effect as well. At the final stage of the surgery, the low-air aditoantral cavity is restored by reimplantation of lateroantral bone massive to its original place having been previously processed by antimicrobial solution combined with low-frequency ultrasound twice, 30 seconds each time. Shunt is put into aditoantral cavity. Meatotympanic flap is put on its proper place.

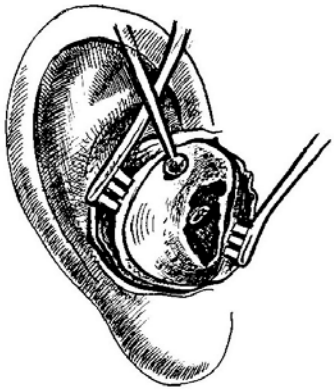

Fig.3 The bone of posterior wall of external meatus is drilled in Wolf's point backwards

Fig.4 Lateroantral bone massive is sawed; revision of antrum, aditus and attic is followed.

Due to the osteoplastic surgery described above, the architecture of external and middle ear is restored while the sanation procedure is done simultaneously. The positive acoustic role of retrotympanic bone-airy space is shown by the works of Sade and Hadas (20), Wullstein H. and Wullstein S. (21) and by the electro-acoustic experiments on isolated cadaver temporal bones (22) previously.

Endoaural tympano-adito-antrotomy in different variants was done in the total of 185 patients aged 14 – 60 years old. Since the early childhood all patients suffered from frequent (4-5 times a year) or constant otorrhea which did not yield to conservative treatment. Otoscopy detected sustained defect (margianal or not marginal) of *pars tensae* in all patients. Before the surgery they could hear whispering speech at the distance of 1.5 - 3 meters, and the loud speech at the distance of 3 - 6 m. All patients were diagnosed of tympanic form of deafness. Bone-air gap was equal to 30 – 50 dB.

Endoaural tympano-aditotomy without aditus microsurgery was performed on 45 patients. Block of aditus was found in 140 patients (76%), aditus microsurgery was performed on 105 of them and osteoplastic mesotympanotomy using low-frequency ultrasound was performed on the remaining 35 patients.

Later clinical and functional results were studied in 153 out of 185 operated patients in the period from 3-6 months to 10 years. The observations showed good morphological result with absence of otorhea in 139 patients. The sustained perforations of *pars tensae* of different sizes with epithelial covering of labyrinth wall of *cavum tympany* and, in some cases, the spreading of adhesive process were found in these patients. Hearing remained on pre-operational level in 133 patients, hearing improvement by 20-25 dB was achieved in 12 cases. Form of hearing hardship stayed on the samelevel in all patients. In 14 cases recurring otorhea was registered, 8 of them experiencing decrease in hearing by 15-20 dB.

Hearing rehabilitation surgery in cases of dry ear was done 5-6 months later according to relevant indications.

Finally, it should be mentioned that the most rational method of treatment of patients with CSM is surgical intervention; and it is reasonable to conduct sanation endoaural surgical intervention in different ways of surgeries of "closed" type. The choice of the method depends on the character and level of spreading of the pathological process in the middle ear cavities determined during the surgery.

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NASAL POLYPS: SURGICAL OR DRUG TREATMENT

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ABSTRACT:

Nasal polyps are benign tumour formations. Usually they are pale gray. Hystologically, they are characterized by inflaming cells infiltration and connective tissue proliferation in the stroma, accompanied by tissue eosinophilia. The nasal polyps develop as a result of infection or allergi. In cases when the polyps severely affect nasal breathing various surgical intervention are applied, e.g. polypectomy, functional endoscopic sinus surgery (FESS), laser polypectomy or functional transatrial maxilloetmoidectomy. In most patients drug treatment with corticisteroids is administered following the scheme of continuing dose reduction.Control over polyps can be achieved with local corticosteroids but when nasal breathing is severely obstructed surgical treatment has to be performed.

HISTOLOGY

Nasal polyps are obstructive tissue formations containing oedematous fluid but with preserved intact surface epithelium (1,2). They are usually light gray, and unlike the conchae, they are mobile and insensitive when touched. The polyps are most commonly situated in the middle nasal canal and are bilateral or multiple.

Histologically, the polyps are characterized by infiltration from inflammatory cells and proliferation of the connective tissue in the stroma accompanied by tissue eosinophilia. The eosinophils are the commonest cells in about 80% of the nasal polyps (3). Other inflammatory cells include the macrophags, plasmocytes, mastocytes and lymphocytes (4). It is therefore said that the nasal polyps present an inflammatory condition from a histological point of view.

AETIOLOGY

The aetiology of the nasal polyps is unknown. The two major theories about its pathogenesis imply the two main understandings that the nasal polyps develop as a result of either an infection or an allergy.

SIGNS AND SYMPTOMS

The main manifestations are related to various degrees of nasal obstruction and anosmia. A typical feature is the unspecific hyperresponsiveness of the nose especially with fits of watery choryza and sneezing. The nasal and eye irritability are not common. The nasal obstruction usually occurs at night and the choryza and sneezing are more common when the polyps are exacerbated. With the worsening of the condition the patients gradually lose their smell sensation and eventually their taste which is related to olfaction. The clinical picture in patients with nasal polyps varies from individual to individual. This is also valid for the polyp recurrence after treatment. Some patients suffer mostly from the loss of olfaction rather than the nasal obstruction. They have usually had chronic nonallergic (vasomotor) rhinitis for many years before developing nasal polyposis(5).

DIAGNOSIS

The nasal polyps diagnosis is established by anterior rhinoscopy. The polyps, however, are sometimes hidden behind the oedematous mucosa and can be detected only after decongestion. An investigation with rigiden and a flexible endoscope may be particularly useful mostly for the posterior part of the nasal cavity. Computer tomography (CT) with a projection of the level of the coronaries seems to be the best method for sinuses assessment.

This investigation aims at determining the features which are going to be important in a subsequent surgical intervention. As the disease progresses the nasal cavity volume decreases which can be objectively established by means of acoustic rhinometry. That procedure may be also useful when assessing the effect from the drug treatment of nasal polyps. It is essential that the investigation of the polyps and malignant diseases is performed by means of microscopic technique. Patients s with prolonged nasal obstruction unresponsive to conservative treatment should consult a ENT specialist(11).

RELATION TO OTHER ILLNESSES

The nasal polyps are related to several pathological states such as intolerance to aspirin and nonallergic (intrinsic) asthma. Approximately one third of the patients with aspirin intolerance have nasal polyps. (Table 1). The nonsteroid antiinflammatory drugs make a cross reaction with aspirin and can cause a similar bronchospasm in asthmatics with aspirin intolerance. The nasal polyps have a greater incidence in dentogenic sinuitis, the syndrome of the immobile cilia (Cartagener's syndrome) and children with cystic fibrosis. The nasal polyps in patients with cystic fibrosis and Cartagener's syndrome (bronchial extension, chronic sinuitis and situs inversus) contain neutrophils and not eosinophils (3).

Table 1. Nasal polyps incidence in related conditions

	Incidence in %
Aspirin intolerance	**36**
Asthma	**7**
• **nonallergic**	**13**
• **allergic**	**5**
Chronic rhinitis	**2**
• **nonallergic**	**5**
• **allergic**	**1.5**
Cystic fibrosis	**16**
Cartagener's syndrome	**27**

Table 2. Surgical and drug treatment in the various phases of nasal polyposis

Pharmacotherapy	**Local corticosteroids**		**Systemic corticosteroids**
Early phase of the illness			**Advanced stage of polyposis**
Surgical treatment	**Polypectomy**	**Functional endoscopic sinus surgery**	

MODERN CONCEPTS OF TREATMENT

Every inflamed condition of the nose is associated with increased risk of illnesses of the lower respiratory tract such as chronic cough, bronchitis and asthma. The treatment aims at resuming the normal functioning of the nose. The aetiology of the nasal polyps being unknown, treatment is symptomatic. Though the nasal obstruction caused by infection may be treated with antiinflammatory drugs (e.g. corticosteroids) surgical treatment is often necessary. Antihistamine drugs and sodium chromoglycate do not have an effect in nasal polyps treatment. In patients with nasal polyps and seasonal or chronic allergic rhinitis to pollen and/or domestic microacari, intensive antiallergen treatment is recommended to prevent the polyp recurrence commonly observed during the pollen season(6).

SURGICAL TREATMENT OR CORTICOSTEROIDS

When the polyps affect nasal respiration or hinder treatment of purulent rhinosinuitis, they have to be removed in a surgical way. Various surgical techniques can be applied with the same final outcome, e.g. to remove the polyps from the nasal cavity as far as it is possible. The more advanced the condition, the more modern are the techniques and the wider the surgical intervention (Table 2). This means that the severe cases irrevocably need surgical treatment and completely replace the treatment with corticosteroids(12).

When the nose is congested by several large polyps they have to be removed by means of a metal loop (polypectomy) under local anaesthesia. This simple surgical procedure immediately improves the nasal functions. Polypectomy does not worsen the patient's asthma, neither does it cause one in spite of the fact that the disease in such patients is usually more severe and they need surgical treatment instead of local corticosteroids more often than the other patients .The repeated polypectomy may be delayed or entirely discarded with prolonged treatment with local corticosteroids(7) .

Functional endoscopic sinus surgery (FESS) is a new technique which can be applied in patients with smaller polyps for cleaning the anterior part of the ethmoidal cell system and for preventing infection. In such a way the vicious circle is avoided, e.g. discharged mucosa, hidden infection, oedema. This method may prove to be the most efficacious in the early phases of the disease, for instance for smaller polyps resulting from or bringing about a relapse of the sinuitis. FESS is accompanied by a lesser risk of severe complications and is therefore used only in cases of relapsed polyps which do not respond to other ways of treatment. Nevertheless, no clinical trials have been conducted so far to determine the place of FESS in the overall scheme of nasal polyps treatment(13).

Lasar polypectomy is still another modern technique whose advantage is found in the minimal bleeding and a drawback is the accumulation of scabs for two weeks after the operation (10).

When the patients with nasal polyps suffer from relapse or undergo polypectomy several times a year, an intranasal or transantral ethmoidectomy, or sphenoethmoidectomy should be performed, preferably under a microscope (9). The patients suffering from both asthma and nasal polyps and/or aspirin intolerance have a more severe course of disease with greater risk for relapse (8). In the majority of patients the treatment with corticosteroids follows the scheme of continuous dosage reduction or discontinuation of the corticosteroids accompanied by continuous improvement of the condition with a reduced number of attacks until their complete elimination in relapsed sinuitis. The authors report is based on over 1 300 sphenoethnoidectomies in which the risk for relapse is below 20%, the complications being below 1% (6). The resumed nasal function is normally accompanied by asthma improvement. Patients with nasal polyps and accompanying bronchial asthma and/or aspirin intolerance have to undergo a more radical surgical operation but no comparable data have been reported in this respect. In principle, aspirin sensitivity is not a significant contributing factor in determining the surgical assessment of patients with nasal polyps (7).

Relapses are common, irregardless of how accurately or radically the ethmoidectomy has been performed (9). This is accounted by the fact that the surgical interference does not remove the inflammatory factor in the nasal mucosa. This can also be due to incomplete ethmoidectomy because of the difficulties in performing total marsupialisation of the ethmoidal space ..Corticosteroids as preventing treatment for relapses

The administration of local corticosteroids does not removed the need for polypectomy even if their local application significantly decreases the risk for subsequent polypectomies (4). Several double blind trials have proved that short-term and continuous treatment with local corticosteroids reduce the size of the small polyps and prevent or reduce the risk of nasal polyps relapse after surgery (6).

In an open one year trial with local beclomethazone dipropionate in 33 patients with continuous nasal polypectosis, Pedersen et al. (7) report good to excellent results in 80% of the patients. No significant side effects were observed. The conclusion they draw is that local beclomethazone dipropionate approximates the ideal treatment for patients with nasal polyposis.

The side effects of the local corticosteroids are insignificant and in most of the cases are transient. They are manifested as local irritation after administration, haemorage crusting and drying of the mucosa in the anterior part of the nose . The problems are relieved with the decrease in the dosage, the application of ointment or applicator change. Some patients complain of drying of the mucosa and crust formation especially in winter and in the dry climatic zones. It has been proved that the water solution of local corticosteroids is as effective as the aerosols and it seems more appropriate for continuous treatment.

Fluticazone propionate

Fluticazone propionate is a representative of a new generation of corticosteroids with high local antiinflammatory activity and very low general effect. The latter is accounted for by the fast drug metabolisation to nonactive compounds during the first circulation through the liver. Fluticazone propionate water nasal spray (FPWNS) has been studied during treatment of seasonal and yearly allergic and nonallergic rhinitis but not in nasal polyps. In the autumn of 1993 in Sweden a double blind clinical trial was performed. A single-blind trial conducted in 1991 showed that FPWNS has a very good effect in severe chronic allergic and nonallergic rhinitis. Part of the patients recover their olfaction and in some the mucociliary activity is restored in the nasal mucosa.

Oral corticosteroids and antibiotics

The general corticosteroids are an alternative for achieving a remission and control over the nasal polyps .The oral corticosteroids have a pronounced but often transient effect on the nasal polyps, especially in the early phases of the disease. They can be administered for a short period of time (10-20 days) because of the risk for side effects. Fast acting preparations are preferable (prednizolone or betametazone). In adults the treatment with prednizolon should begin with 40 mg for three days, after which the dosage should gradually be reduced. Treatment with oral corticosteroids should always be followed by administration of local corticosteroids. During continuous treatment with oral corticosteroids the dosage should be minimal and preferably taken in every other day to reduce the risk of general side effects. Unlike the local corticosteroids, the oral ones are usually effective in anosmia. In patients with purulent rhinosinuitis and nasal polyposis, it is vital to overcome the infection by means of antibiotics, cleansing of the maxillary sinuses being often indicated. It is difficult for the antibiotic to reach the focus of infection and therefore continuous treatment with broad spectrum antibiotics is recommended. This antibiotic treatment can be accompanied by oral corticosteroids for the achievement of fast effect.

CONCLUSION

It is important to first determine the exact aetiology of the nasal polyps and then decide on the treatment which is symptomatic and individual. The local corticosteroids are useful in the control of the polyps but severely affected nasal breathing necessitates surgical tratment. The purpose of the operation is to relieve the nose from the polyps as far as it is possible and attempt at preserving the normal anatomy of the nasal cavities. It is therefore suggested that patients with nasal polyps undergo surgical and drug treatment simultaneously.

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ФАРМАКОЛОГИЧЕСКОЕ ЛЕЧЕНИЕ ПОВРЕЖДЕНИЙ ОРГАНА СЛУХА И РАВНОВЕСИЯ

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Summary
This paper presents data obtained as a result of drug treatment of 500 patients with various hearing and equilibrium disorders such as ataxia,vertigo,spatial dsorientation, acute and chronic hypoacusis, tinnitus aurium. The drugs used were from 5 different grous:antiemetics,antivertigenosa,tranquilizers,stimulants, and vasodilators. The paper also deseribes methods of otoneurological examinations, indications for pharmacotherapyqand doses and routes of drug administration as well as therapeutic results.

Key words: ataxia, vertigo, otoneurological.

Головокружение, тугоухость, ушные шумы и расстройства равновесия являются сопутствующими симптомами нарушения функций органа слуха и равновесия, причем данная патология нарастает. Это связано с последствиями перенесенных нейроинфекций, механических и акустических травм, воздействием ототоксических медикаментов, аллергии, опухолевых процессов и т.д./1/

Этиология и патогенез вестибулярных и слуховых нарушений во многих случаях пока неизвестны, поэтому лечение имеет характер полифармакотерапии/2/. В связи с наличием медикаментозной патологии, в литературе все чаще встречаются критические высказывания. Имеются в виду нежелательные реакции и побочные действия медикаментов/3/.

Расширение применения вестибулярных, аудиологических, постурографических тестов для отоневрологической диагностики допускают новые лечебные концепции/4/.

Современные лечебные методы включают хирургические вмешательства, электростимуляцию, блокаду звездчатого узла, физиотерапию, акупунктуру, баротерапию и фармакологическое воздействие /5/. По данным литературы, фармакотерапия является наиболее частым методом, занимающим в лечении 85%./6/.

МАТЕРИАЛ И МЕТОДИКА

В оториноларингологической клинике Мед.университета г.Варна в 1995-2000 гг. обследовано 500 больных с жалобами на атаксию, головокружение, пространственную дезориентацию, внезапное или длительное понижение слуха, ушной шум ;среди больных было 38% женщин и 62% мужчин. Средний возраст составил 44 года.

Всем больным, помимо отоневрологического обследвания, проводили лабораторные исследования и консультации различных специалистов. Конечная оценка болезни, кроме того, основывалась на результатах ЭНГ, аудиологических и постурографических исследований. У большинства больных эти исследования проводили комплексно. Аудиометрическое исследование включало пороговую аудиометрию, надпороговые пробы, речевую аудиометрию. Для оценка органа равновесия применяли калорическую пробу, исследование статокинетики, позиционную пробу и оптико-кинетического нистагма. Состояние системы равновесия анализировали на основе стандартных постурографических исследований и после гальванической стимуляции.

РЕЗУЛЬТАТЫ И ОБСУЖДЕНИЕ

При анализе материала было установлено, что внезапная длительная глухота и нарушение равновесия отмечались на фоне сосудистых расстройств

В 36%,на фоне инфекционных болезней- в 14%,вследствие действия ототоксических лечебных средств – в 3%, после акустических травм – в 6%, механических – в 5%,вследсвие опухолей мостово-мозжечкового угла – в 2%,при болезни Меньера – в 19% и по невыясненным причинам – в 15% случаев выбор метода лечения и медикаментов зависели от характера и локализации повреждения.

Отдельные лекарственные препараты вводили внутривенно в течение 10-15 дней. Большинству больных, как правило, вводили 2% лидокаин в физиологическом растворе в возрастающей дозе от 7 до 15 мл. После окончания стационарного лечения продолжали амбулаторное лечение. В большой группе больных фармакотерапию дополняли электростимуляцией слухового нерва, физиотерапевтическими процедурами и восстановительной терапией.

В группе больных с острой глухотой, у которых лечение начали в сроки 1 до 3 суток с момента наступления глухоты, получено улучшение слуха в 83% случаев.

У больных, леченных спустя 7 дней, улучшение наступило в 57% случаев, спустя 14 дней – в 18%,до 3 мес. – в 12%.полное восстановление слуха отмечено также у 2 больных, у которых острые рецидивы болезни наступали в течение 4 лет. Как видно, результаты лечения значительно ухудшаются в зависимости от продолжительности глухоты.

Что касается ушного шума, то в консервативном лечение заслуживают внимания следующие фармакологические средства: бетасерк, танакан, кавинтон, компламин и миллгама. Применяя вышеуказанные фармакологические препараты, в 9% случаев получили полное прекращение шума, заметное понижение интенсивности шума в 30%, небольшое улучшение – в 37%;результатов не было в 24% случаев.

В группе лиц, жалующихся на головокружение, применяли симптоматическое лечение. Хорошие результаты в профилактике приступов болезни Меньера были

получены при применении торекана, сермиона, компламина. В тяжелых случаях необходимо было применение лекарственных средств на протяжении многих месяцев.

ВЫВОДЫ:

1.Фармакотерапия при нарушении слуха и вестибулярной функции включает медикаменты противорвотные, уменьшающие головокружение, транквилизаторы, стимулирующие и сосудорасширяющие средства.

2.Несмотря на усовершенствование диагностических методов, трудности в определении этиологии и патогенеза повреждений органа слуха и вестибулярного аппарата обосновывают применение полифармакотерапии.

3.Получены хорошие результаты лечения в случаях внезапной глухоты. Меньшая степень улучшения слуха наблюдалась у лиц с длительной глухотой и ушным шумом.

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LYMPHOTROPIC THERAPY IN EXPERIMENTAL PURULENT OTITIS MEDIA

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ABSTRACT

Of the lymphotropic therapy were carried out in 20 mature rabbits, strain Chinchilla, weight 2-3 kg. All animals were divided into three groups in dependence on method of treatment: Group 1 included animals receiving lymphotropic therapy with introduction of antibiotics (ampicillin in acute purulent otitis media, lencomicin - in chronic purulent otitis media) subcutaneously into the area of regional lymph nodes. Group 2 presented animal who only underwent local sanation ofpumlent otitis media. Series 3 consisted of rabbits who was treated with local sanation and lymphotropic therapy. The animals were decapitated after treatment in different time for acute and chronic pumlent otitis media. Morphological investigations were performed in the mucosal membrane of the middle ear and the regional lymph nodes. Results of investigations showed that lymphotropic therapy in purulent otitis media resulted in normalization of the stucture of mucous membrane of the middle ear, improvement of microcirculation and significant shortening of the period of treatment in comparison with two other series of experiment. This allowed to consider method of lymphotropic therapy to be perspective and available for treatment of patients with acute and chronic forms of purulent otitis media.

Key words: *acute and chronic purulent otitis media, mucous membrane of the middle ear, regional lymph nodes, morphology, lymphotropic therapy.*

INTRODUCTION

Otitis media is the most common cause for different groups of population that can lead to significant hearing lose and is the most common reason to receive antimicrobial agents. In this connection the efficacy of therapy for purulent inflammatory otitis media is of great interest [10].

It is well known that otitis media may be acute suppurative, serous, mucoid or secretory and chronic suppurative. The combined forms of disease, for example combination of serous and secretory forms, or transition from one form to another, are frequently occurred in the childhood [8]. All forms of otitis media are characterized by presence of exudate and change into chronic form of disease. The causes of these features have frequently been attributed to insufficient efficacy of therapeutic measures and polyresistence of antibiotic being used. The administration of antibiotics is necessary in the acute period of disease or during exercerbation of the process in the middle ear, therefore the choice of antibiotic and the route of its introduction has become very important. The restriction of therapeutic therapy activity is greatly relative inflammation, blocking contact of antimicrobial agent to tissue with pathologic changes and bacterial pathogens. Overcoming of tissue barriers and deposition of therapeutic agents along the routes of infections extension is an important task in the treatment of purulent wounds and prophylaxis of generalized wound infection [9].

The role of lymphatic system is well known in the pathologic and physiologic processes [1,7]. However, it should be remember that, besides drainage function, lymphatic system plays an important role in the immune responses of organism.

The existing methods of the effect on the lymphatic system include both endolymphatic and lymphotropic treatment [4]. The study on traditional methods of introduction of drugs (intravascular, intramuscular) on the large experimental material showed that concentration of antibacterial agents in the lymph and lymphatic system appeared to be insufficient to stop the progress of infectious process in the focus of inflammation. While

endolymphatic and lymphotropic introducing of anti-inflammatory agents the considerable concentrations of them may be achieved to prevent further generalization of the process. The therapeutic efficacy of endolymphatic therapy is rather high, but its application requires of high professional skill and is related to some difficulties so this method of treatment is indicated in marked features of toxemia and intoxication. Whereas nonsurgical method of elevation of therapeutic agent concentrations in the lymphatic system being named as endolymphatic or lymphotropic therapy and developed in 1983 showed that it allowed to support big concentrations of therapeutic agents in the blood, in comparison with intramuscular administration during studying on their pharmacokinetics in all the times of follow up [2]. As well in traditional methods of treatment antimicrobial agent penetrates from lymph into the blood. Due to low velocity of lymph flow along the vessels antibiotics pass from lymph into blood flow in small portions that provides to obtain sufficient concentration of agent in the lymphatic system and to support it in blood. The use of lymphotropic therapy allowed achieving positive effect while introducing of antibiotics in mean daily dose. Preliminary introduction of drugs with lymph stimulating effect (lidasa, lazex, novocain and others) and serving as 'guide' contributes to increase tissue permeability and improvement of interstitial fluid flow [3]. Hydratation of the major substance of connective tissue and, as a rule, its swelpenetration of substances into the lymphatic system, that would be necessary during venous congestion and lymphostasis for their resolving.

Because in acute and chronic purulent otitis media the process at the initial stage is restricted by single region we considered the regional lymphotropic therapy to be the most pathogenically-based method of medicamentous treatment.

It is well known that in acute process in the middle ear and, particularly, during exacerbation of chronic suppurative otitis media the enlargement of regional lymphatic nodes, regional lymphadenitis, frequently occurres. The latter envelopes zone of projection of mastoid process with occipital bone. The choice of the place of injection of therapeutic agents was based on features of anatomo-topografic structure of lymphatic nodes of middle ear. The study of lymphatic system of middle ear showed that it had segmentary structure. Accordingly to the proposed classifications of lymphatic system of head and neck [5], criteria for this division were similarity of embriogenesis, presence of common resources of circulation of lymph nodes and venous blood flow, innervation and ways of lymph outflow. Lymphatic system in the middle ear consists of two networks, in the skin and in the subepithelial mucosa, which goes to the attention and posterior parotid and posterior cervical lymph nodes.

The purpose of investigation was to study morphologic structure of mucosa of the middle ear and regional lymph nodes under the effect of lymphotropic therapy in the different times of treatment in acute and chronic purulent otitis media.

MATERIALS AND METHODS

Experimental morphological investigation of the structure of middle ear was performed in 20 nature rabbits, strain Chinchilla, with weight 2-3 kg.

The animals were previously selected with normal otoscopy pictures. Modeling of purulent otitis media was induced inder general anesthesia with colipsol (0,5-0,6 ml) and local anesthesia with 2% solution of dicain. Then dissection of the cavity of the middle ear was made with paracentesis needle. Acute purulent otitis media was induced by introduction of 0,1 ml of culture Staphylococcus aureus 9 strain 209 in concentration 10 milliard of microbe bodies in 1 ml. The picture of acute purulent otitis media has developed 2-3 days later.

Chronic purulent otitis media (CPOM) has been achieved by introduction into the tympanic cavity of 0,2 nil 24-hour broth culture of blue pus isolated from patient with chronic purulent otitis media. Turunda soaked in this mixture was inserted into the tympanic cavity for 1,5 months. The picture of chronic purulent otitis media has been developed 1,5-2 months later.

All animals were divided into 3 experimental series accordingly to the method of treatment: series 1 included animals who received lymphotropic therapy; series 2 consisted animals who underwent to local treatment including daily toilet of external auditory meatus, insertion of turunda soaked in saline solution. This group of animals served as control. Series 3 was made of animals who received combined treatment: local treatment with lymphotropic therapy.

Lymphotrpic therapy (LT) was performed by subcutaneous introduction of antibiotic in the zone of regional lymph node (LN). Previous introduction of lympho-stimulator was done to improve resorption of antibiotic. For this purpose we used novocain and lazex (0,5% ml) followed by administration of antibiotic through at the same needle 3-5 minutes later. In cases of acute purulent otitis media ampicillin was used, and in chronic purulent otitis media neloren (linkomycin) was used. Calculation of the dose of antibiotic was made per a kg of body weight, the preparation was introduced in single mean deily dose.

Experimental animals were performed daily otoscopy, registration of the state of regional lymph nodes. The course of treatment was 5-7 days. Morphologic investigations were carried out after the finishing of the course of treatment.

The animals were decapitated and the cavity of bulls was opened with the use of trocar. Immediately regional lymph nodes of the ear zone were excised. For histologic investigation the sample was fixed in the 25% solution of glurate aldehyde on 0,1M phosphate buffer pH=7,4. Fixation lasted during a day. After dehydratation in the ethanol solution on increasing concentration material was attained and pour out to paraffin blocks, width 4 mcm, then the samples were analyzed in the scanning electron microscope S 405 (Hitachi) in accalated voltage 15 kW. Investigation was carried out in the middle ear of intact animals, animals with model of acute purulent otitis media and chronic purulent otitis media before and after lymphotropic therapy.

RESULTS

Comparative analysis of results of treatment in animals of the first series, who received lymphotropic therapy revealed significant shortening of the time of treatment by 3-4 days, stopping of purulent discharge from the ear was noted on 2-3 day in acute purulent otitis media, on 3-4 day in chronic purulent otitis media. Lymphotropic therapy for acute purulent otitis media (AROM) resulted in sharp improvement of the course of disease and normalization of otoscopy picture. The best result was achieved in the 3d series of animals who underwent the complex local and lymphotropic therapy. In animals receiving only local therapy purulent discharge from the ear, as a rule, continued for a long time, normalization of otoscopy was obtained on the 4-5 day in AROM, and on the 7-8 day in CROM.

The results of investigation showed that normal internal mucous membrane consisted of layer of squamous epithelial cells, containing microvilli. The number of letter was different on the membrane. There were cells cytoplasmic membrane of which had a lot of thin and long microvilli. The other cells contained far-between distributed short microvilli. The thirst type of cells were free of microvilli at all, their membrane was smooth or slightly rough.

At initial stage of AROM the structure of mucous membrane has significantly changed. Cell surface was bulging into the cavity of middle ear, the number of microvilli decreased, they became short. The intercellular borders enlarged and precipitates, cell of inflammatory exudate appeared in a small number on the cell surface.

At the late stage of AROM the progress of the above-described changes was noted. Epithelial cells acquired cubic form. Cell surface was free of microvilli, wrinkled with non deep folds. Some cells had local defects of cytoplasmic membrane. Some cells were desguamated. Denuded sites covered with fibrin, cells of inflammatory exudate, predominantly, with neurotrophils and macrophages. Cells of inflammatory exudate located on the surface of epithelial cells.

After lymphotropic therapy in a day the descries in the amount of cells of inflammatory exudate was already noted on the mucous membrane of the middle ear. The number of leukocyte was predominantly reduced whereas the number of macrophages remained still high. The content of fibrin was decreased significantly. Epithelial cells preserved cubic form, but their surface became free of fibrin. The borders between cells were less enlarged. Denuded sites closed with adjacent epitheliocytes.

More later, on the 5-6 day after treatment the number of cells of exudative inflammation decreased. Mucous membrane has been practically cleaned from elements of inflammatory exudate. Borders between cells were invisible or looked like thin straight furrows. Denuded sites were not relealed. After the course of lymphotropic therapy on the 6^{th} day microvilli appeared on the cell surface, but their quantity was significantly lower in comparison with normal levels.

One day later after modeling of AROM and subsequent LT the structure of lymph nodes has not significantly changed in comparison with similar time in animals without treatment (series 2). The lumens of marginal and interstitial sinuses were sharply dilated, containing macrophages, lymph, a small number of lymphocytes and elements of detritus. Due to edema the spaces between cortex cells and in the soft bands were enlarged. The increase in signs of lymphoid cell migration through wells of venule and sinuses was noted. The vessels of hemocirculatory bed were hyperemic.

Three days later the structure of lymph node different from similar one in the control animals. In the cortex lymphocytes distributed more compactly. Analogous changes were also noted in the soft bands. Hyperemia of the vessels significantly reduced.

Seven days later the beginning of treatment the structure of lymph node normalized, signs of edema and circulatory disorders were not revealed.

In experimental chronic purulent otitis media changes of mucous membrane were similar as those were described in animals with acute purulent otitis media, Mucous membrane was sharply hyperemic, edematous, thickened due to growing of epithelial tissue, vascular and perivascular sclerosis was noted. Stroma was infiltrated very much with leukocyte elements. Purulent fusion was noted in some its sites. In CPOM there was appearance of lymphocytes on the surface of epithelial layer. Investigations performed in the series of animals receiving only local treatment did not reveal significant changes. Purulent discharge from the war preserved, as well as of signs of inflammation, hyperemia and infiltration. In the series of animals receiving lymphotropic therapy was significant improvement with stopping of purulent discharge on the 7-8 day and normalization ofotoscopy picture was found on the 9-10 days after treatment.

Significant improvement of the couse of disease with stopping of purulent discharge and normalization of otoscopy picture on the 5-6 day was noted in the series of experiments with lymphotropic therapy combined with local therapy. Significant normalization of external mucous membrane of middle ear was no noted when cells of inflammatory exudate and fibrin accumulation were absent. However, in comparison with norm there was no microvilli on the surface of cytoplasmatic erythrocyte membrane.

Morphologic investigations of regional lymph nodes in animals from control group showed reactive hyperplasia. Lymph nodes were enlarged, situated likely packet, indurated, cross-section was of pale pink color.

Histologic investigation revealed sharp enlargement of lumens of marginal sinuses containing a great number of macrophages and lymphocytes. Lumens of interstitial and cortex. Sinuses were sharply enlarged, similar changes were revealed in cortex. In a number of cases lymph node Stroma fibrosis was noted due to development of excessive quantity of epithelia tissue. These data showed sharp overloaded of lymphatic system and decrease of efficacy of lymph filtration through lymph nodes.

The performance of lymphotropic therapy revealed that lumens of marginal,

interstitial, cortex and brain sinuses were moderately dilatated containing lymphocytes, predominantly. The content of macrophages and lymphoid follicules with reactive centers of multiplication was significantly reduced that indicated decrease in lymph node response degree to inflammatory process.

DISCUSSION

Data of scanning electron microscopy showed that in cases of AROM and CROM the significant change of structure of epitheliocytes of mucous membrane of the middle ear occurred. The coming of fibrin and cells of inflammatory exudate into the cavity of middle ear was noted. Besides, in cases of CROM the growing of epithelial tissue bands was noted.

Comparative analysis of three series of experiment revealed the most significant clinical changes and trends to normalization of relieve of mucous membrane of the middle ear in the group of animals who received combined treatment including local sanation of tympanic cavity and lymphotropic therapy. Morphological manifestations looked like absence of cells of inflammatory exudate and accumulation of fibrin. Significant descrease in edema, vascular plethora was noted. Favorable clinical affect was associated with appearance of lymphocytes on the surface, increase in epithelial cells, proliferative fibroblast activity and epitheliocytes. Characteristic ultrastructural changes of the latters showed increase of specific functions of there cells under the effect of lymphotropic therapy.

While studying structure of regional lymph nodes it should be noted that it expressed by reduction of stage of reactive hyperplasia due to decrease in hyperemia in cortex and central sinuses, increase in temps of migration and recirculation of immunocompetene cells, rising of mitotic activity of lymphocytes, increase in content of plasmatic cells. This may be explained by stimulating effect on lymphocirculation of lymphotropic therapy.

The process of the lymph production and lymph discharge, by definition of Casley-Smith [10] consists of three consecutive stages: filling, intermediate stage and discharge of lymph into proximal segments of lymphatic system. Lymphatic chain with its roots being situated not far from draining microvesseles or resorptional zone of interstice, provided drainage of interstice with fluid, and, that is particularly important, protein with-drawing. Substances with small molecular mass from interstice underwent to the resorption, particularly, in the bluff flow bed, and particles with great molecular mass (antibiotics should be related to them) predominantly go to the lymphatic bed. Different activity of resosption depends not only on the state of molecular mass but also on the state of "guide" ways from various fibrillar bands in the interstice. If this fibrillar bands of collagen's fibres under the normal conditions have fixed directions, then pathological changes result in damage of drainage function of venous vessels the liquor outflow. During venous hyperemia with damage of drainage function of venous vessels the liquor is going paracapillar area in the interstitial tissue to the lymphatic capillaries that leads to the increase in intensity of lymph production.

Thus, local introduction of preparations, having stimulating effect on the lymph production and lymph flow, not parenteral administration for total lymphostimulation but directly into the tissue induced increase in liquors outflow from vessels into interstice due to difference in concentration of substances in the tissues and blood on each sides of venous membrane.

Local application of antibiotics provided sufficient concentration of agent in the inflammation, as well as significantly improved resorption of the preparation, as in purulent inflammation due to pathologic substances antibiotics introduced were inactivated and increase of excretion of mucous membrane glands with elevation of humidity of the latter and it is covered with thin fibrous-purulent coating.

It should be noted that transport of substances from one liquor to another as under normal, so as pathologic conditions, was performed at the level of interstice. Direct transport

of substance from one draining system to another through damaged sites of micro- and macrovessels was possible only in crude destruction's followed by deformation and damage of ways of water and dissolved particles outflow.

Data of morphologic investigation indicated the role of regional lymph nodes in providing of homeostasis and increase in mitotic lymphocyte activity. Our results confirmed previous investigations of the other authors reporting that mucous membrane of the middle ear had absorption function and played the role of local defensive system absorbing great number of macromolecules of the middle ear and regional lymph nodes. The author suggested the idea that parotid lymph nodes behind the ear were the major ways of drainage function of lymphatic system.

CONCLUSION

The lymphotropic therapy in modeling of acute and chronic purulent otitis media in rabbits induced significantly marked clinical effect that resulted in acceleration of diminishing of inflammatory process and shortening the period of treatment in comparison with control group. This method of treatment provided normalization of the structure of mucous membrane of the middle ear, improvement of microcirculation, facilitation of migration of immunocompetent cells into focus of inflammation and allowed to stop inflammatory process. Lymphotropic therapy promoted to obtain sufficient concentration of antibiotics in the focus of inflammation, as in parenteral introduction of preparations, but with more marked economic effect. Our results of clinico-morphologic investigations showed that method of lymphotropic therapy appeared to be perspective and available for treatment of patients with acute and chronic purulent otitis media.

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The 19th International Conference of Young Otorhinolaryngologists Saint Petersburg, 19–21 June 2000

Professor Bert Schmelzer
Chairman of the International Jury

Below follovs the publications continued from Folia Otorhinolaryngologica Vol. 6, No. 3 – 4

CLINICAL AND ROENTGENOLOGICAL PECULIARITIES OF SINUITIS IN CHILDREN WITH PULMONARY TUBERCULOSIS

T.M. Azhenov
Otorhinolaryngology Clinic of Akmola State Medical Academy, Astana, Kazakhstan

Concomittant sinuitis in children predominantly was of hyperplastic type which aggravated general condition of patients.

HAEMOSTASIS' CONDITION IN TONSILLOGENIC INTOXICATION

A.Zh. Baimenov, R.K. Tulebaev
Otorhinolaryngology Clinic of Akmola State Medical Academy, Astana city, Republic of Kazakhstan

The study of haemostasis' system in patients with chronic decompensated tonsillitis represents great interest. The process of trombogenesis was in direct dependence with the clinical picture.

SURGICAL ACCESS FOR THE OPTIC NERVE DECOMPRESSION IN ITS BONE CANAL.

V. Bondarouk, N. Matvejev
ORL Dept. Medical Military Academy, Saint Petersburg.

The impairment of visual function as the result of head injury has been noted by different authors in 2% of cases and is caused by the damage of different parts of visual tract.

Surgical decompression of optic nerve is indicated in cases where there is a traumatic injury of optic nerve and the conservative treatment is unsuccessful.

Neurosurgical (craniotomy), transshpenoidal and transethmoidal and also transorbital approaches have been considered as traditional surgical accesses for optic nerve decompression.

Intranasal and transorbital accesses have become available due to micro- and endoscopic equipment .In our country such operations of optic nerve decompression have never been performed.

As we have a lot of operation experience on the ethmoid labyrinth cells and clinoid sinus, transsphenoid ectomy of chromophobe adenome as well we started practicing the surgical technique of optic nerve decompression through the clinoid sinus and ethmoid labyrinth cells.

Having done a series of operations on section materials (cadavers; 26) the certain difficulties of intranasal surgical access were noted.

Thus, trassphenoid access through the cliniod sinus front wall revealed the following unfavourable features.

Long and narrow operation canal: its length from the nasal tip to the clinoid sinus frontal wall was equal 96 ± 7mm at an average and the size of safe burr hole in the clinoid sinus nasal part was as following: the height – 10 ± 2mm and the width – 5 ± 1mm correspondingly. Such sizes of an operation field made technical performance of optic nerve canal trepanation considerably difficult. While using this access we were not able to trepane the canal at the site of Zinni ligament that could diminish the effectiveness of the whole operation.

The second disadvantage of this access is the accidental chance to damage a.aphehopalatina at the site of the clinoid sinus front wall (nasal part) into the ethmoid one.

Intranasal transethmoidal access has the following drawbacks:

Narrow and long operation canal permitted ethmoidal and sphenoidal parts of the optic nerve to be seen in details, but we did not have an opportunity to use the drill while using the endoscope in the operation field at the same time.

The combination of two operation canals, one for videomonitoring and another for instrument manipulation, allowed to perform optic nerve trepanation on the section materials more effectively. On the other hand, this technique under clinical conditions, from our point of view, could not always be successful due to profuse bleeding. That, in turn, could cause intraoperational complications and at first optic nerve damage itself and that of the internal carotid artery.

Further, the skill was mastered at the external approach technique of ethmoidal labyrinth cells (Grunwald operation) and clinoid sinus through them to give the clear idea of all optic nerve parts. In literature the transorbital access to trepane the optic nerve canal was mentioned, but there was no description of the procedure that lets us describe its main steps, as follows:

– Arched incision of the skin and periosteum from the eyebrow middle to orbital medial angle,

– Subperiostel soft tissues of the orbital cavity are separated from to optic nerve canal external foramen,

– While separating the tissues ethmoidal arteries are ligated and coagulated at their further transection,

– Ethmoidal labyrinth posterior cells are opened 15 mm in front of the optic foramen and through them the clinoid sinus opening is being done;

– While controlling with microscope the burr hole is extended to be enough for instrument manipulation,

– The optic nerve canal trepanation and Zinni ligament dissection is being performed with the diamond drill and microscoops.

– This surgical approach has the following advantages:

– The operation canal is considerably widened and shortened ; its length is 75 ± 5mm at an average and the width – 8mm.

– Microscope can be used at surgery.

– The ethmoidal arteries transection diminishes the possibility of bleeding.

– The intraoperation complications become less possible thanks to proper visual controlling and a shorter operation canal.

– There is no need of a nasal tamponade.

The disadvantages revealed are the following:

– Sometimes fatty tissue prolapse into the operation canal zone .

– There is a postoperative scar on the face skin.

After this surgical access had been elaborated it was used in 4 patients in theclinic. In 3 cases the clinoid sinus trepanation was performed at the whole length while in one patient it was done only at the length of 10mm from the external foramen because of the very dense bone tissue forming the canal.

Positive result was in one patient (in that whose canal had not been completely trepaned), two weeks later his vision was restored from 0.1 to 0.4, the visual field narrowing disappeared. In 6 months it was restored to 0.7.

One patient had the visual field widening, but qualitetively his vision did not change.

There was no improvement in 2 patients postoperatively.

We think that the used surgical access for optic nerve canal trepanation is the safest and can be recommended for wide practice. But it requires that the surgeon should know anatomic peculiarities of this region and practice the surgical technique using section materials. Such operations must be performed in close cooperation with neurosurgeons and ophtalmologists.

SURGICAL ACCESS FOR THE OPTIC NERVE DECOMPRESSION IN ITS BONE CANAL.

V. Bondarouk, N. Matvejev
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The impairment of visual function as the result of head injury has been noted by different authors in 2% of cases and is caused by the damage of different parts of visual tract.

Surgical decompression of optic nerve is indicated in cases where there is a traumatic injury of optic nerve and the conservative treatment is unsuccessful.

Neurosurgical (craniotomy), transshpenoidal and transethmoidal and also transorbital approaches have been considered as traditional surgical accesses for optic nerve decompression.

Intranasal and transorbital accesses have become available due to micro- and endoscopic equipment .In our country such operations of optic nerve decompression have never been performed.

As we have a lot of operation experience on the ethmoid labyrinth cells and clinoid sinus, transsphenoid ectomy of chromophobe adenome as well we started practicing the surgical technique of optic nerve decompression through the clinoid sinus and ethmoid labyrinth cells.

Having done a series of operations on section materials (cadavers; 26) the certain difficulties of intranasal surgical access were noted.

Thus, trassphenoid access through the cliniod sinus front wall revealed the following unfavourable features.

Long and narrow operation canal: its length from the nasal tip to the clinoid sinus frontal wall was equal 96 ± 7mm at an average and the size of safe burr hole in the clinoid sinus nasal part was as following: the height – 10 ± 2mm and the width – 5 ± 1mm correspondingly. Such sizes of an operation field made technical performance of optic nerve canal trepanation considerably difficult. While using this access we were not able to trepane the canal at the site of Zinni ligament that could diminish the effectiveness of the whole operation.

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ON EARLY DIAGNOSTICS OF MALIGNANT TUMOURS OF LARYNGEAL PART OF THE PHARYNX.

A.A. Chernokur, S.A.Kryvenky, D.S.Solomko
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Faculty ORL (Chief of faculty - professor. V.V. Bereznyuk)
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Preceeding chronic inflammation of the hypopharynx has been found in 58,3% of patients with hypopharyngeal carcinomas. Early admittance of these groups of patients to clinics is recommended to undergo full course of diagnostics in suspicious cases.

ENDOLYMPHONODUS ANTIBIOTIC TREATMENT OF ACUTE PURULENT INFLAMMATORY DISEASES OF THE MIDDLE EAR.

A.K.Dosova
South Kasakhstan State Medical Academy.

Intralymphatic administration of antibiotics in patients with purulent otitis media proved to be effective in 104 cases

HEART RHYTHM STRUCTURE IN PREDICTION OF LIFE THREATENING EVENTS DURING ENT SURGERIES IN CHILDREN

I.Fadeeva, V.Chasnyk, N.Tunyan, V.Andronnicov
St.Petersburg Pediatric Medical Academy, ENT Department
(Chief – prof. E.A.Tsvetkov)

Analysis of heart rhythm in children with ENT pathology is very helpful both for preop examination and during surgery. It helps to find the high risks basing on abnormalities of cardiac rhythm structure patterns which might result in lethal dysrhythmia during ENT operation.

BETALEUKIN EFFECTIVENESS IN TREATING PATIENTS WITH CHRONIC PURULENT RHINOSINUSITIS.

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The activity of the immune system depends on the condition of intercell cooperation, which is the responsibility of cytokines. Cytokines are mediators of the immune system, which respond to insertion of foreign bodies, the immune damage, as well as inflammation, reparation and regeneration [8]. Cytokines can be subdivided into proinflammatory, which provide the start up of the immune response and antiinflammatory, which provide the completion of the immune response and many other types [8, 9].

It is a proven fact that a great number of endogenous cytokines are synthesized at the acute process, whereas chronic diseases are characterized by a lower level of cytokines synthesis.

Interleukin-1 (IL-1) is one of the chief mediators of local inflammatory reaction of the acute phase response [2]. It belongs to the group of proinflammatory cytokines. The action of IL-1 is, basically, directed on activation of cells of the macrophage-phagocyte link [6]. At present, the name IL-1 unites two types of polypeptides, which are marked as IL-1α and IL-1β, which possess, practically, the same range of biological activity. Besides, the third type of protein is discovered with the similar structure and possessing the ability to link specifically with receptors IL-1 without any manifestation of biological activity. Competing with IL-1 for one and the same receptor, it blocks the biological activity of IL-1 and, consequently, it was called receptory antagonist IL-1 (IL-1ra) [10].

Interleukin-8 (IL-8) also belongs to the proinflammatory cytokines, which is the strongest chemoattractant for neutrophils. IL-8 is synthesized by activised monocyte-macrophagal cells, activised by IL-1 cells of epithelium [1,4]. The main produsing cells and the main source of IL-1 in the human organism are monocytes and macrophages [3]. The nasal tunica mucosa residual cells - macrophages are situated in the subepithelium layer. Their quantity is increasing at inflammation owing to recruitment of monocytes from the blood stream because the cells of macrophage-phagocyte link are responsible for the elimination of the pathogen from the lesion of inflammation [6].

The aim of the investigation in question is the study of the level of proinflammatory cytokines IL-1β, IL-1α, IL-1ra, IL-8 of patients with subaccute and chronic purulent rhinosinusitis and the possible correction of the immune response when treating with recombinant IL-1β.

Tasks:

1. The study of production of IL-1 by blood cells and cells of bathed liquid of sinuses of patients with chronic purulent rhinosinusitis.
2. Estimation of the dynamics of the functional conditions of cells of macrophage-phagocyte link in the blood and bathed liquid before and after treating by betaleukin.

3. Estimation of the clinical effectiveness of IL-1β in treating patients with purulent rhinosinusitis.

4.

15 patients have been observed with purulent rhinosinusitis from fourteen to fifty years of age. 7 patients (47%) had been ill for less than four weeks and 8 patients (53%) had been ill longer than eight weeks. All the patients complained of blocked nasal cavities, nasal pus discharge, headaches, and weakness. Rhinoscopically, 7 patients had hyperemia and edema of one side of tunica mucosa, and 8 patients had hyperemia and edema of both sides of the nose. Three patients had pus discharge in the middle nasal meatus and three patients - in the common nasal meatus. The X-ray films of the paranasales sinuses showed total or subtotal with horizontal level of dark patch of one or several paranasales sinuses: one patients - maxillary sinus on the one side; three patients - on both sides, and two patients had the dark patch only of frontal sinus. Five patients had maxillary sinus and frontal sinus affected on the one side and four patients- on both sides. Thus, 40% had lesions on one side and 60% of patients had lesions on both sides. Besides classical method of investigation, computer tomography of paranasales sinuses was used in axial and coronal projection and endoscopic examination of the nasal cavity and the condition of hiatus semilunaris with the help of flexible and rigid endoscopes [7].

Only the patients without hyperplastic changes and polyps were included into the investigated group and after the diagnostical puncture there was pus in the bathed liquid. 8 patients (53%) had dense pus in the sinus from 2to 5 ml. 5 patients (33%) had crumbled pus with unpleasant smell, the bathed liquid was turbid. 2 patients (13%) had cyst-purulent contents in bathed liquid. The maxillary sinus was drained through punctural ostium in its medial wall [5]. Trepano-puncture and draining of the frontal sinuses was performed through the frontal wall, with the help of a trepan. A polychlorvinil catheter was used for maxillary sinus drainage and a metal cannula for frontal sinuses.

Five outpatients received penicillin from 5-10 days before being treated by betaleukin.

Otorhinolaryngological in-patients (15 persons) were prescribed betaleukin (recombinant interleukin-1β- the permission of Russian Health Department No 97/56/6, for clinical usage). The medicine was inserted locally into the affected sinus. Betaleukin was added to NaCl isotonic solution. First the sinus was washed up to clean by isotonic solution. Then 5ml of 20 ng/kg betaleukin solution made ex tempore was poured into the sinus daily within five days.

There were 10 patients with rhinosinusitis in the test group, who were treated in the usual way: catheterization and drainage of the affected sinus, daily washing of it by isotonic solution with further insertion of 5 ml of dioxydinum.

Immunological investigation included double investigation (before and after the treatment) and estimation of functional and metabolical activity of cells of the macrophage-monocytic link, synthesis of cytokines (IL-1α, IL-1β, IL-1ra, IL-8) by blood cells and cytokines concentration in the bathed liquid. The material under investigation: venous blood and the first portion (10 ml) of the bathed liquid, got while washing the sinus.

Immunological investigations consisted of the first and second level assays. Stimulation of the whole blood cells by phytohemagglutinin (PHA) in the concentration 10mkg/kg within 24 hours in t – 37^{o}C was performed for estimation of blood cells production of cytokines.

Concentration of IL-1β was investigated in supernatants of cell cultures. The investigation of IL-1β, IL-1α, IL-1ra, IL-8 cytokines was performed with usage of hard phase immunofermental analysis (test system of “Cytokine, Ltd.” St.Petersburg). The estimation of functional qualities of cells of macrophage-monocytic link was performed with the help of the tests, characterizing the phagocytal cells conditions: phagocytic index (% of cells which

phagocyte latex particles), phagocytic number (the average quantity of latex particles absorbed by one cell), adhesion and metabolical activity (NBT-test).

After the first injection of betaleukin two patients had fever up to 37.2°C-37.9°C, which was not accompanied by aggravation of the general state of health. After the first washing of the inflamed sinus by the betaleukin, the symptoms of four patients (27%) became more acute, which manifested itself in worsening of permeability of the natural ostium, tunica mucosa edema, enlargement of the quantity of pus mass in the bathed liquid. After the second and third washing the quantity of pus reduced. Pus was observed in small clots, the rest of the bathed liquid was transparent. On the third and fourth day the change of the sinus contents was observed. The bathed liquid contained only mucus. Clinical symptoms of the disease practically disappeared on the fifth-sixth day of the treatment. In the test group the process was without the acute phase and seven patients had pus in the sinus up to ninth-tenth days of treatment.

The effectiveness of treatment is estimated by the following criteria: disappearance of clinical manifestation by the third day was estimated as an excellent result; by the sixth day – as a good, and satisfactory result, if a positive dynamics was observed by the sixth day of the treatment. All patients with the rhinosinusitis disease, treated by betaleukin showed positive results after the treatment. 73% of cases showed excellent and good results, in the test group - 30%. The health condition of one patient in the test group did not become better, that required surgical treatment. The analysis of the immunological investigation proved that patients with treated by betaleukin had all functions of blood monocytes changed: the increase of phagocytic index (from 52.57±29% to 76.47±3.73%, $p<0.01$), phagocytic number (from 5.78±0.54 to 7.45±0.31, $p<0.05$), the activity NBT-test spontaneously (from 11.60±0.95% to 15.07±0.85%, $p<0.05$). The change of IL-1β level and the activity of neutrophils in the blood were not observed. The local immunity indices, directly in the lesion of inflammation were changed as follows. The injection of betaleukin into the inflamed sinus provoked the increase of concentration of proinflammable cytokines IL-1α (from 352.53±121.69 to 801.46±251.62 pg/ml, $p>0.05$), IL-8 (from 495.65±228.33 to 1673.43±427.16 pg/ml, $p<0.05$), and the reduction of IL-1ra concentration (from 108.61±15.79 to 60.99±25.84 pg/ml, $p>0.05$) in the lesion. The functional qualities of phagocytes (neutrophils) of the bathed liquid were not changed much: metabolical activity in NBT-test increases (from 46.67±6.35 to 60.78±4.06%, $p>0.05$), adhesion of quality (from 2.03±0.58 to 6.94±1.91%, $p<0.05$) and the tendency to the increase of phagocytic index by the fifth day of treatment (from 44.40±4.61 to 52.14±5.96%, $p>0.05$) were observed.

Three – four months after the treatment questionnaires were sent to the patients treated by betaleukin with the request to estimate condition of their health. Six persons (40%) responded to the questionnaires. Five of them were feeling themselves better, one without any changes.

Thus, the injecting the preparation directly into the inflamed sinus did not change the functional condition of blood phagocytes (neutrophils), but their activity in the bathed liquid was increased. The activation of phagocytical and metabolical qualities of blood monocytes was observed. The synthesis of proinflammatory cytokines (IL-1α, IL-8) was increased in the inflamed sinus, so clinical symptoms became more acute on the second day of the treatment. That is when the preparation was injected locally the inflammation was discontinued via acute phase. As a result the lesion of inflammation was cured faster than we observed in the test group. Consequently, the injection of IL-1β into the inflamed sinus provokes the realization of the immune response due to the stimulation of the non-specific link. The acquired data enable us to estimate the pathogenesis mechanism of the chronically purulent rhinosinusitis versus cytokines net function on the local level. The immunological criteria of betaleukin effectiveness of purulent rhinosinusitis patients are the increase of IL-8 level, which

stimulates the recruitment of neutrophils in the lesion of inflammation for intensifying the non-specific immune response and completion of inflammation in sinuses.

CONCLUSIONS:

1. During the treatment of patient chronic with purulent rhinosinusitis the synthesis of IL-1β in blood cells is not changed, the concentration of IL-1α, IL-8 is increased in bathed liquid.
2. The functional condition of cells of macrophage-phagocyte link in blood is characterized by the increase of monocyte functions, and the function of neutrophils undergoes changes in the lesion inflammation.
3. The usage of cytokine IL-1β in treatment of purulent rhinosinusitis results positively in 73% of cases.

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FLUTICAZONE-PROPIONATE APPLICATION IN PATIENTS WITH RECONSTRUCTIVE SURGERY OF THE EAR

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Fluticazone-propionate was tested in patients prior and postop ear functional surgery in nasal sprays as well as topically in tympanic cavity via Eustachian tube and ear canal tubes irrigations. The preparations was proved to be effective for the mucosal oedeme control.

THE RESPIRATORY PATHOLOGY IN GOLD-MINING INDUSTRY WORKERS

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Various pathology of mucous membrane of the nasal cavity and sinuses was observed in a consederable number of workers of gold–mining industry, hypertrophic and subatrophic changes of mucous membrane of nasal cavity which was correlated with the duration of exposition to harmful industrial factors as well as with the length of service.

EFFECT OF TAURINE ON THE CHANGE OF POTENTIAL AND PERMEABILITY OF ERYTHROCYTE MEMBRANE CAUSED BY GENTAMICINE.

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INTRODUCTION

Ototoxicity is an important clinical issue, as it is responsible for a significant portion of neurosensory hearing loss.

Aminoglycoside antibiotics are widely used in the treatment of different infections. Its ototoxic action has been investigated clinically on the patients and in numerous animal studies (Sagalovich, 1974).

Significant toxic effects of aminoglycoside involve the sensory hair cells of the inner ear. Recent studies have demonstrated that aminoglycosides kanamycine, gentamicine and other drugs induced the loss of hair cells. However, a molecular and cellular mechanism for the death of cochlear hair cells still remains unstudied. The results of a number of studies have suggested that they cause the changes in membrane permeability of the receptor cell and alter the ion, especially potassium, concentrations in endo- and perilymph of inner ear. Such observations are insufficient, some of them were performed in vitro using the artificial models membrane (Khanamiryan et al., 1998).

The causal mechanisms for ototoxicity are multifactorial and can include vaso-constriction and declines in cochlear blood flow.

In the attempts to find medicines which would be efficient in preventing and treating ototoxic injury caused by aminoglycoside antibiotics, several studies discovered the brain-derived neurotrophic factor, acidic fibroblast, nerve growth factor, antioxidants and other substances (Ernfors et al., 1996; Sone et al., 1998).

Taurine, a β-aminosulfonic acid, is the second most common free amino acid, recognized as the major osmoregulating amino acid in the brain and other organs.

The cellular localization of taurine in the Corti's organ has been established by using a monoclonal antibody and fluorescent microscopy (Harding and Davies, 1993) and postembedding immunocytochemistry (Usami and Ottersen, 1995). The cochlear role of taurine is still uncertain.

The aim of this study was to observe the effects of taurine on changes in erythrocyte membrane potential and permeability evoked by gentamicine. Taurine can possibly might be a factor which could prevent ototoxicity.

METHODS

The investigation was performed in 3 groups of albino rats. In the first group (control animals), the potential and permeability of erythrocyte membrane to K were determined. In the second group of experimental animals, the changes in potential and permeability of membrane to K were measured after daily injections of the ototoxic dose of gentamicine sulfate (100 mg/kg body wt intraperitoneally during 10 days). In the third group, albino rats received taurine 50 min before gentamicine. In animals of the last two series, blood samples

were collected on 1st and 10th day of experiment. The potential of erythrocyte membrane was measured by means of electrometrically determined hydrogen ion distribution (Macey et al., 1978). The outcome of K^+ ions from erythrocytes was measured by K-selective electrode "Shutiz".

RESULTS AND DISCUSSION

Erythrocyte membrane can be regarded as a membrane model for studies on functional and structural properties of plasmic membrane without hindrance superposition of intracellular structures.

Control measures have shown that membrane potential of erythrocytes was on average 6.6 mV. Ten days after the beginning of daily injections of ototoxic aminoglycoside antibiotic gentamicine it increased to 7.2 mV. Ten days after the last injection of gentamicine the potential still continued to rise to 9 mV (Fig. 1).

The exposure of rats to amino acid taurine 50 min before injections of gentamicine

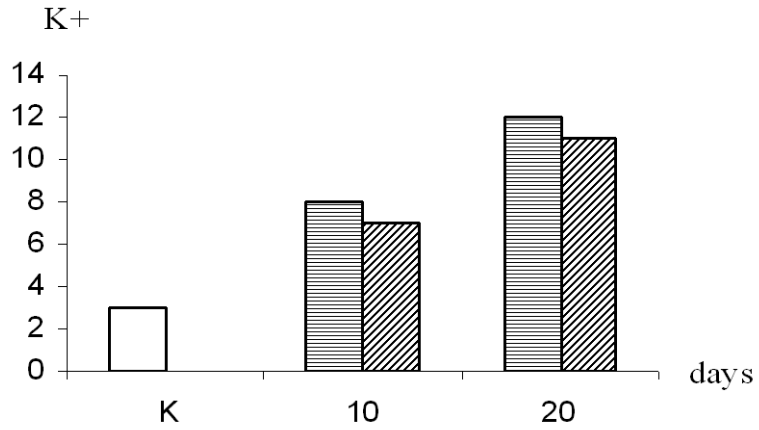

Fig. 1. Membrane potential of erythrocytes after injections of gentamicine and taurine with gentamicine to rats.

during 10 days led to a slight decline in membrane potential to 7 mV. Ten days after the last injection of gentamicine the membrane potential still showed a decline down to nearly the initial point. Exploration of K ion outcome from erythrocytes has shown that there was some correlation between the value of membrane potential and intensity of K^+ outcome (Fig. 2).

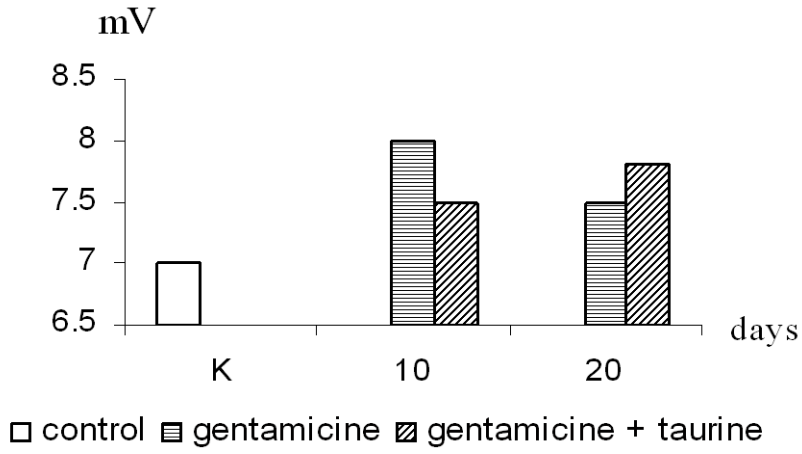

Fig. 2. Potassium K outcome from erythrocytes.

Ten days after of gentamicine injections the outcome of K ions increased twice as much and by the 10^{th} day its rate exceeded the initial value by 3 times.

The increased rate of K^+ ion push-off from erythrocyte cells is likely a result of the breakage in structural organization of the membrane.

The performed studies show that introduction of gentamicine put forward the changes in functional stability of the cell membrane.

It is known that blood of stria vascularis and fluid of inner ear exchange by ions and other substances. As follows from discussion provided above, changes which arise in blood erythrocytes by gentamicine can affect the status of receptor cells in the inner ear (Plouzhnikov and Teplitskaya, 1975; Pokotilenko, Harutyunyan, 1986; Harutyunyan, 1985).

Our results indicate that taurine can be an important factor preventing ototoxicity induced by aminoglycoside drug gentamicine. Our data also favor the theory of osmoregulatory homeostatic role of taurine in the inner ear.

A passive entry of taurine into perilymph through the blood-perilymph barrier is hypothesized (Angelini et al., 1998).

Gentamicine treatment along with application of taurine leads to the marked declining effect of gentamicine alone. Ten days after the last treatment by both drugs the effect of taurine had been continuing. The expression of the influence probably depends on the values of introduced dose and duration of treatment. Further studies which will take into account these factors will facilitate finding the ultimate conclusion on usefulness of investigated amino acid in prevention of ototoxic damages to the inner ear.

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REOPERATIONS IN CHRONIC EPI-AND EPIMESOTYMPANITIS

Khorov O.G., Novasialetski V.A., Ryazantsev I.V.
Grodno Medical University (Republic of Belarus)

An analysis is given of the 40 cases with recurring bone destruction which required various types of ear surgery.

DEFORMATION OF THE NOSE – RHINOLOGICAL OR PSYCHOLOGICAL PROBLEM?

I.Kim
Irkutsk, Russia
(Scientific supervisor – prof. E.V.Nosulya)

Patients with nasal deformities were divided into 4 clinical groups basing on the extend of nasal deformations. It was shown that 90% of the patients has distinct character accentuations, sensitive type of attitude to cosmetic defect being in every forth patient. Psychlogist or rather psychiatrist sometimes prior surgery is infrequently was needed to have some patients consulted.Clinically significant psychic deviations, thus, had been discovered in 5% of the patients. In conclusion, as we assume, the treatment efficiency is depended not only on purely surgical results, but should be concerned with correlation of psychological defects in patients as well.

PROCESSES DISGUISING LARYNGEAL CANCER.

A.Kovtunenko, N.Vichoreva, S.Sokolenko
Department of Otorhinolaringology – State Medical Academy –
Dniepropetrovsk – Ukraine

The authors believe that laryngeal fissure (thyrotomy) as a diagnostic procedure still preserves its value, especially, in cases of postradiation oedema, postop scarring, laryngeal tuberculosis, chronic inflammation, etc.

AURICULOREFLEXOTHERAPY IN COMPLEX TREATMENT OF SENSORINEURAL HEARING IMPAIRMENT

Elza Makhambetova
Department of Otorhinolaryngology Karaganda Medical Academy Karaganda, Kazakstan

ABSTRACT

Auriculodiagnosis and auriculotherapy (AT) used in 22 patients with sensorineural hearing impairment were analyzed. Use of auriculotherapy is suggested as a treatment option because of our favorable results. AT is a composite part of the traditional acupuncture needling therapy. Stimulation in definite zones of the auricle conch (AC) can evoke direct reflected reactions. The last have therapeutical action on internal illnesses, normalize altered functions of the central nervous system and also affect the psychoemotional sphere. The points of AC are localized with conformity to natural laws. The picture atlas of the points and zones at the AC is reminiscent of a human embryo in the uterine cavity (head down) (the hypophysis of P. Nogier).

We present a study carried out on 22 patients with acute 7 (31.8%) and chronic 15 (68.2%) sensorineural hearing impairment 9SHI). Etiology: blood vessels - 10 (45.5%), toxic-7 (31.9%), infectious - 2 (9%) traumatic - 1(4.6%), unknown - 2 (9%) The age was from 32 to 71; male - 4 (63.6%), female - 8 (36.4%). A control group was formed by 12 patients with the same pathology and they were only treated by drugs. 19 patients (86.4%) of the main group noted reduction of tinnitus, and 3 (14%) noted disappearance of tinnitus. There was improvement of general psychiatric status in all patients. The patients of the control group, 7 (58.3%), had reduction of tinnitus, and 4 (33.3%) had improvement of speech recognition. Hearing improvement in patients of the main group was from 10 to 20 dB. at 500-1000 Hertz with acute SHI AN 5 to 10 dB. with chronic SHI. In the control group, the hearing increase was 0 to 5 dB. There was no improvement in 4 (18.1%) of patients in the main group, and in 4 patient (33.3%) of the control group.

Key words: *Auriculotherapy, electropuncture, hearing impairment*

INTRODUCTION

Auriculoreflexotherapy (AT) has been practiced for over 2000 years in the Far East and Egypt . In the 1950's, it was introduced into Western Medicine by Dr. Paul Nogier in France [7]. In the Soviet Union. V.G. Vogralik, D.M. Klimenko, D.M. Tabeeva, Y.M. Balabyan, and L.S. Gohman analyzed and systematized the method following from Nogier's work. [3, 8, 2,7].

AT is a composite part of the traditional acupuncture needling therapy. Stimulation in definite zones of the auricle conch (AC) can evoke direct reflected reactions. The last have therapeutical action on internal illnesses, normalize altered functions of the central nervous system and also affect the psycho-emotional sphere [4,1,7].

The points of AC are localized with conformity to natural laws. The picture atlas of the points and zones at the AC is reminiscent of a human embryo in the uterine cavity (head down) (the hypophysis of P. Nogier) [5,6]. (Figure 1.)

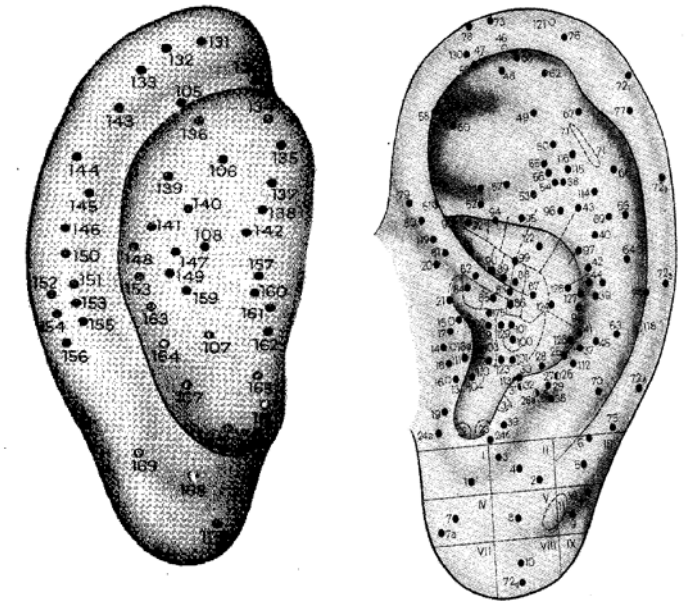


Fig. 1. The points and zones at the auricle conch

R.A. Durinyan (1983) presented series of pictures with schematic representation of territorie of innervation of the AC's different parts composed by him according to data on questions of AC embryogenesis [4]. Efficiency of AT is based on the rich innervation of AC. (Figure 2)

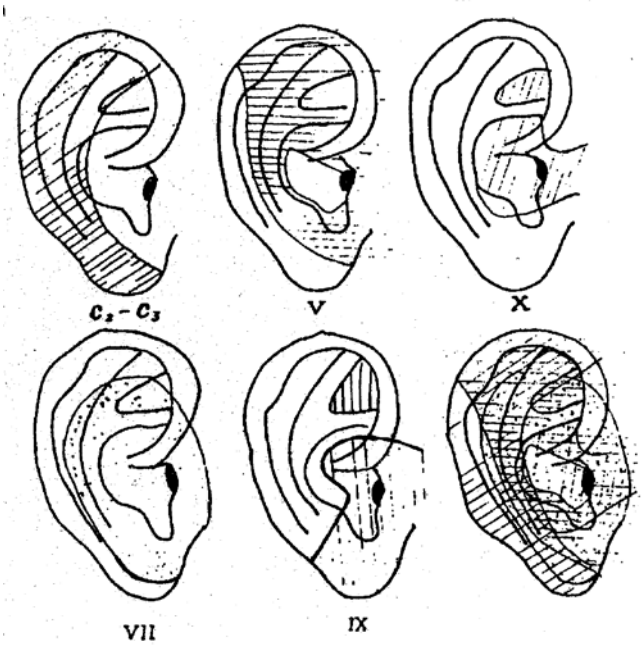
AT is not only used to treat disease, but also can be used in diagnosis. There are many different instruments in use that allow determination of the active points. The principle action is based on the decreased electrical resistance of acupuncture points in relation to surrounding tissue/skin [5,7,8,].

MATERIAL

We present a study carried out on 22 patients with acute 7 (31.8%) and chronic 15 (68.2%) sensorineural hearing impairment 9SHI). Etiology: blood vessels - 10 (45.5%), toxic- 7 (31.9%), infectious - 2 (9%), traumatic – 1 (4.6%), unknown - 2 (9%) The age was from 32 to 71; male - 4 (63.6%), female - 8 (36.4%). A control group was formed by 12 patients with the same pathology, and they were only treated by drugs.

SHI was diagnosed by complaints of patients, their history, data of ENT examination by speech, turning fork, threshold and superthreshold audiometry. Reoencephalography and x-ray of neck vertebra were carried out in case of need. Auriculodiagnosis (AD) was carried

out in all patients of the main group and consists of: 1) examination of AC by 4-5 divisible increase with a magnifying glass; 2) sound of AC with a metallic feeler; 3) electroauricular diagnosis and identification are conducted by "-" and "+" current to determine points' "imbalance". The method was carried out on an ELAP apparatus with 30 mkA, 30 seconds on a point, for 10 days. Only 3-4 points were used at the same time. In acute cases, electropuncture was used, and in chronic cases, the needling therapy was used. Acupuncture needles 10 mm. long are inserted into the points and then are left in situ for 30 minutes. The twirling and piqueing is repeated before removal.



C2-C3 - territorie of innervation of AC by nerves of cervical plexus
V - territory of innervation of AC by trigeminal nerve
VII - territory of innervation of AC by facial nerve
IX - territory of innervation of AC by glossopharyngeal nerve
X - territory of innervation of ac by vagus nerve

The suppression method was used in tender, extended, easily-determined points with high electric conductance and lower electric resistance. The stimulation method was used in hard to determinate points with high electric resistance and low electroconductance.

RESULTS

1. Morphologic changes as hyperemia, scaling, hyperalgesia and "imbalance" of more than 10 mkA in the 34th point "cortex of brain" (hi-cshi-cui) were determined in 18 (82%) patients.

2. "Imbalance" in the 37th point "the neck part of vertebra" (czin-chzui) was found in 12 (55%) and also 3 (14%) patients had microscars in the point.

3. "Imbalance" and hyperalgesia in the 95th point "kidney" (schen) in 5 (23%) patients.

4. The 9th point "internal ear" (nei-yar) was characterized by "imbalance" in 11 (50%) of patients.

5. "Imbalance", hyperemia and scaling of the 20th "external ear" (vai-er) were shown om 6 (27%) of patients.

6. "Imbalance" in the 13th point "adrenal" (schen-shan-syan) was found in 3 (14%) of cases.

7. Hyperalgesia and "imbalance" in the 25th point "trincus of brain" (ngao-gan) was discovered in 2 (9%) of cases.

8. Hyperalgesia and "imbalance" in the 16th point "auriculotemporal nerve" was seen in 2 (9%) cases.

9. "Imbalance" were determined in the 59th point "reducing blood pressure" of 3 patients (14%)

10. "Imbalance" of the 35th point "temporal" (tai-yan) was seen in 8 (36.3%) cases.

In addition to the points with alteration, we also included other points in the treatment protocol: the 82nd (zero) point which stimulates all other active points of AC and the 55th (schen-men) is a point of general action, and has wide spectrum of auricular effects.

Comparison of data of patients' examination with data of auriculodiagnosis shows that alteration in the 34th point were determined in patients with neurocirculator distony and in patients with prevalence of tinnitus. Neck osteochondrosis was confirmed in 9 of 12 patients with alterations in the 37th points.

The pathogenesis of SHI is rather complicated and treatment may also be complex. AT may be used in addition to the general treatment by drugs. As is well-known, from 7 to 10 drugs are used by the same time at patients with SHI, and sometimes even more. With the adjunct use of AT, the quantity of the drugs can be reduced to 3 or 4. For example, the 55th and 34th points possess sedatory action, the 9th point improves blood circulation in the internal ear, and the 13th has anti-inflammatory action. 19 patients (86.4%) of the main group noted reduction of tinnitus and 3 (14%) noted disappearance of tinnitus. There was improvement of general psychiatric status in all patients. The patients of the control group: 7 (58.3%). had reduction of tinnitus, and 4 (33.3%) - improvement of speech recognition. Hearing improvement in patients of the main group was from 10 to 20 dB on 500-1000 Hertz with acute SHI and 5 to 10 dB. with chronic SHI, while in the control group. the hearing increase was 0-5 dB. There was no improvement in 4 (18.1%) patients of the main group, and at 4 patients (33.3%) of the control group.

CONCLUSION

1. AD is objective, painless, and simple to carry out.
2. AT is an effective adjunct to add to drug treatment of SHI.
3. AT allows reduction of the quantity of drugs in treatment of SHI, secondary to its therapeutical action some how on its pathogenesis

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ON DIFFERENTIAL DIAGNOSIS AND THE CHOICE OF APPROACH FOR REMOVAL OF VARIOUS DESTRUCTIVE MAXILLARY AND RHINOPHARYNGEAL MASS LESIONS.

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CT was found to be of utmost diagnostic validity for mass extention borders and, thus, for proper preop planniry of surgery.

By the way even relatively high sensitivity and specificity of the methods concerning of various destructive maxillary and rhinopharynx mass lesions sometimes give no way of determining the character of the neoplasm [4,5,7,8]. In the meantime as regards elimination of

such lesions preoperative diagnoses is of a great importance [7,9,11,12]. In this connection and for obtaining some further information enabling in the preverification period elucidation their additional differential diagnostic differences we considered it expedient not only to analyze thoroughly black and white CT shadows but also to correlate there peculiarity with the findings of ultrasound investigation (USI) and diaphanoscopy. The choice of surgical intervention method of various destructive diseases of facial skull may be based in cases when full notion about wide extension process is got. Now this problem is being solved easier then it was before by means of CT and MRT [1,2,7].

MATERIALS AND METHODS

We examined our patients using a Tomoscan VX-S computed tomograph of the Philips Co. (Japan), Sinuscana 101 L\ O Oriola (Finland) and Gering diaphanoscope (Russia).

To the present time we have findings about 93 individuals with destructive lesions of the maxilla and rhinopharynx. 4 of the patients had destructive maxillary cysts (group1), 65 of the patients had cancerous maxillary neoplasms (group2) and 24 had juvenile angiofibroma of skull base (group3).

RESULTS AND DISCUSSIONS

The first group patients with retentional and echinococcus varieties of destructive cysts have similar CT signs includes homogenous shadow, clearly defined boundaries, round its periphery delimiting the “rim”, gradually thinning of bone formations from pressure of growing cysts with its diversion, increasing until the development of defects. However, together with its similarity we have differences too. For example, in medium- intensity (40-70 HU) CT shadow of echinococcus cysts on the contrary of low- intensity (30-40 HU) shadow of retentional cyst, may found several rounded or oval contours of different dimentions (daughter cysts in multichaimber structure). Their CT shadows as principal shadow have equal intensity. Likewise dissimilar were both sinus translucency patterns in diaphanoscopy and the character of ultrasound waves (uw) reflection, by USI. Translucency of retentional cyst is even more intensive on the affected side than on the sound one. This one explained Tinsdal effect for colloid liquids and increasing size, thinning and defects of bone formations. As for echinococcus cyst despite more increasing size and considerable destruction of bone formations, translucency on both sides is of equal intensity. Uw reflection from anterior and posterior cyst walls is for the retentional cyst. As for echinococcus cyst uw reflection not only from anterior and posterior cyst walls, but also intermediary reflections from daughter cyst capsules (multichaimber structure).

Second group patients CT syndrome characterized by a CT shadow of marked intensity (50-90 HU), non-homogeneous, distinguished by a large variety of shapes and dimentions. It features lighter spots differing in size of indetermined and fanciful shapes. The shadow superimposed on maxillary formations extends beyond the maxilla externally, internally, and posteriorely. In other words, CT shadow for extensive cancerous mass lesion extends to os zygomaticum, beyond the sinus walls in nasal cavity, fossa pterygopalatina, retromaxillary space and forward from the superior sinus wall. The shadow boundaries have indistinct, indefinite countours. There are signs of destructions of maxillary bone formations, noted for such symptoms that are characteristic for their resorption. Some bone fragments with corroded boundaries and varying homogeneity may be identified within a shadow, which testifies to their resoption due to the process of infiltration. In the event of cancerous maxillary tumor there is no translucency, the uw reflection is multiple from the conglomeration of tissues.

Third group patients CT syndrome characterized by a finely spotted CT shadow of moderate intensity (30-70 HU), near by monostructure with well-defined CT boundaries, but rimless. The shadow superimposed on rhinopharynx and then depending on variety extends

beyond the rhinopharynx to oropharynx, nasal cavity, fossa pterygopalatina, retromaxillary space, infratemporo- buccalis region, orbit and in the region of middle crania fosse. On the separate CT levels well-defined deformation of bone formations from increasing pressure could be seen. That was manifested by there displacing and thinning, slowly increased to the defects. On the various CT levels some fragment of bone formations were defined. Inside the principal shadow usually there were several rounded or oval fragments. A uniform density of the shadow distinguishes it. Diaphanoscopy for juvenile angiofibrima (JAF) showed luminescence of equal intensity on both sides (1-2 stages of development). The increasing weaken of luminescence of maxillary sinus in case of extensive JAF, sinus size discreasing and a secondary suppurative process developing. USI findings depended on maxillary sinus condition. If sinus ventilation wasn't broken and was full of air, then uw reflection was recorded from the anterior wall only. When a secondary suppurative process took place uw reflection was registrated from anterior and posterior maxillary sinus walls.

On the basis of the above- mentioned facts we demonstrate the first table that we used in our practical work.

Table 1. Differential diagnostic differences in some destructive lesions of the maxilla and rhinopharynx

Distinguishing feature signs	**Cancerous maxillary Tumor**	**Cyst**		**Juvenile angiofibroma**	
		Retention variety	**Echinococcus variety**	**Basal variety**	**Sphenoethmoidal and pterygomaxillary varieties**
CT shadows	Non-homogeneous shadow of distinct intensity (50-90 HU) with lighter spots of various shapes and dimensions	Homogeneous shadow of slight intensity (30-40 HU)	A medium intensity (40-70 HU) shadow. Inside the principal shadow are several rounded or. oval contours of different dimensions (daughter cysts in multichamber structure) of equal intensity	A finely-spotted shadow of medium intensity (50-60 HU)	
CT shadow boundaries	Indistinct, indefinite	Distinct with a «soft» periphery rim	Distinct with a «rough» periphery rim	Distinct but rimless	
CT image of bone structures	Destruction with signs of indistinct and incomplete bone resorption. Bone fragments within tumor are corroded and vary in shadow intensity	Osteoporosis from pressure and displacement of bone structures with a uniform in thinning towards bone wall defects		Osteoporosis from pressure and displacement of bone structures / Ordinary bone fragments with distinct boundaries and homogeneous shadows	
Diaphanoscopy evidence	No luminescence of the Lumen	More intensive luminescence than on the intact side	Lumen luminescence similar to that on the intact side	Lumines-cence of equal intensity on both sides	No or lower luminescence intensity on the affected side (III, IV stages)
USI evidence	Multiple uw reflections from tumor conglomeration	Uw reflections from anterior and posterior cyst walls	Uw reflections from anterior and posterior cyst walls and intermediary reflections from daughter cyst capsules (multichamber structure)	Uw reflections from anterior and posterior maxillary sinus walls with a secondary suppurative process or uw reflection from anterior wall only in cases, when sinus full of air	

Recently, the work dealing with the processing of data white-gray- black CT (scanogramms) for obtaining them in color. Dealing with this problem our colloquies from Kazakstan have worked out a new method. They used the gradients of black-gray- white in colored imagination. Right now we are not able to give the final diagnostic value of this

findings (scanograms) in color image. But it is clear now that this branch of our work has definite perspectives and is likely to improve the informativity of CT.

The usage of CT has not only diagnostic value, but also allows to define the size of destructive process in rhinopharynx, maxilla and its extension to adjacent structures. Besides, together with clinical examination, diaphanoscopy and USI it helps us to diagnose the etiology of the process (retentional and echinococcus cysts). This information has particular importance while choosing of surgical intervention.

Let's illustrate it on the example of JAF in table 2, where the character of surgical intervention is represented. It depends on it's initial growth and the initial stage of development (our clinic classification is proposed by G. Feigin, 1999).

Table 2. Choice of surgical intervention method under JAF depending on tumors stage and initial growth on the basis of ORL-HNS in-patient Ministry of Health, Kyrgyzstan, 2000.

JAF initial Growth	JAF stage of development			
	I	II	III	IV
Basal Variety	○	○ ●	● ○	
SphenoethmoidalVariety	●	○	●	●
Pterygomaxillary Variety			●	○
Non-established			●	● ○

○ **– Natural routes (4)**

● **– Denker approach (1)**

● **– Lateral rhinotomy (17)**

○ **– Feigin approach (combine lateral rhinotomy and Lowers-Balon) (2)**

When JAF is localized in region of rhinopharynx and nasal cavity it is removed on the bases of our clinic findings via the natural routes. In the very same process of localization, but with a little tumor extension to the rhinopharynx, which makes it difficult to remove JAF, through fore finger control, we are sure that the usage of Denker approach is better. When the JAF shadow is discovered beyond the mentioned adjacent anatomic structures usually this approach is not acceptable, because it's extension in sphenoid sinus, fossa pterygopalatina and retromaxillary space is just impossible. In these cases we prefer to use the extended variant of lateral rhinotomy. And only in case of JAF extension to infratemporo- buccalis region, orbit, and middle crania fossa, besides the above-mentioned localization, the approach of G. Feigin is justified (combined lateral rhinotomy and Lowers- Balon approach).

CONCLUSIONS

The differential diagnosis criteria thus developed are of particular importance in such cases when it is difficult or impossible to obtain the material for pathomorphological examination, while a diagnostic punction is counterindicative (echinoccocus cyst). Under such circumstances it is essential to improve the diagnostic standards in the preoperative period with a view to planning the pattern of surgical intervention already in the previrification period. With this in mind, it appears that correlation of CT, USI and diaphanoscopy evidence may provide important quidance. CT is of particular importance in a choice of surgical intervention. It helps us to confirm tumor extension and to choose the most correct approach for surgical intervention.

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POSTLARYNGECTOMY VOICE RESTORATION IN ONCOLOGY.

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The author summed up in detail the first clinical material from Moscow Oncological Centre pertaining to different types of voice prostheses implanted into laryngectomized patients comprising group of 32 people.

ON SURGICAL CORRECTION OF DEFORMATIONS IN CARTILAGENOUS NASAL SEPTUM.

I.I.Pavlenko, S.M.Socolenko,
Faculty of Otorhinolaryngology, Dniepropetrovsk State Medical Academy, Dniepropetrovsk, Ukraine.

The authors have modified the surgical technique of Krikoun (1982) to further perfecting the incision and grafting.

ANCHOR-LIKE SHAPED SPLINT FOR ANTERIOR GLOTTIC STENOSES.

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Head of ORL Department – Prof. E.A.Tsvetkov

Original technique has been employed in four cases to prevent anterior laryngeal webbing with excellent result. Anterior laryngeal splint specially designed was inserted through external surgical approach and removed in due time postop endoscopically.

CORRELATION OF TINNITUS AND TYPES OF PERSONALITY.

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Laboratory of hearing and speech disorders
(Head – prof. A.I.Lopotko, I.P.Pavlov Medical University)
Stavropol Regional Center of Audiology and Hearing Rehabilitation
(Chief – G.K.Krzhechkovskaya)

Shmyshek test was employed to evaluate psychological types of personality in patients with tinnitus. It was found that personal accentuation towards disease is largely governed by the type of personality.

SMOOTH PURSUIT EYE MOVEMENTS (SPEM) IN PERIPHERAL VESTIBULAR NEURON'S DAMAGE.

V.I.Primako (Minsk)

SPEM' analysis in a complex of traditional otoneurological tests is important to provide reliable diagnostic information in determining perspective approaches to the problems of vestibular adaptation and compensation.

CUPULOLITHIASIS ETIOLOGY AND AFFECTED AREA OF VESTIBULAR SYSTEM AT VESTIBULAR NEURONITIS

O. Rybina, Minsk

A clinical case of cupulolithiasis is described to have been proven of viral aetiology.

DIAGNOSTICS OF ENDOTOXEMIA IN CHILDREN WITH OTOGENIC COMPLICATIONS

Sergeeva A.P., Ryazantcev S. V., Gorina A.S.
Irkutsk Regional Hospital for Children (Director- Seliverstov V.M.)

Immunological and biochemical investigations of the serum were carried out in 35 children with otogenic intracranial complications. It was found that the degree of toxemia was proportional to the gravity of the patients' condition. Some laboratory tests are believed to reflect the dynamics of the clinical picture.

IMMOBILIZED PROTEOLYTIC ENZIMES IN THE TREATMENT OF PATIENTS WITH SINUSITIS.

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(Scientific supervisor – prof. E.V. Nosulya)

The author has tested clinically experimental treatment with antibiotics+proteolitic enzime (imosimasum) in patients with acute and chronic maxillitis to find the punctural management with the drug compound mentioned rather effective.

COMPUTED TOMOGRAPHY AND ULTRASOUND SCANNING PARAMETERS CORRELATION STUDY IN THE PATIENTS WITH VARIOUS TYPES OF CHRONIC SINUSITIS.

N.E.Uvarova
Yaroslavl Regional Clinical Hospital, Microendoscopic ORL Centre

Basing on personal clinical material the author corroborates the data telling of the highest correlative degree between CT and US-derived diagnostic information.

NEW WAYS OF VOICE FUNCTION IMPROVING IN PATIENTS WITH LARYNGEAL CANCER AFTER HORDECTOMY.

V.S.Ushakov, S.V.Ivanov, V.I. Garbaruk
St.Petersburg, Russia

Voice function disturbances following laryngeal resection due to T1-T3 tumours were corrected by gel injections technique combined with simultaneous laryngoplasty.

CLINICAL AND IMMUNOLOGICAL CORRELATES IN PATIENTS WITH POLIPOSOUS RHINOSINUSITIS AND LIVING IN TYUMEN REGION.

Yastremsky A.P.
Scientific Supervisor, Chief of ORL Depertment Prof. Izvin A.I.
Tyumen Medical Academy

Patients with nasal poliposis who devell in Northern Siberia Region were under clinical and immunological observation and examination. Decreese of immunoreactivity was demonstrated in that category of patients.

LARYNGEAL MASK AND THE HUMAN LARYNX

S.S. Yeghian
Moscow State Medical Stomatological University
Chair of Otorhinolaryngology Head - prof. R.G. Anyutin

The laryngeal mask airway (LMA) was designed by A.Brain in 1981 as a possible alternative to tracheal intubation and has been used safely in general anaesthesia for children and adults in spontaneously breathing patients as well as in those undergoing controlled ventilation. The LMA is a general purpose airway which fills a niche between the face mask (FM) and endotracheal tube (ETT). It sits with its tip in the hypopharynx at the interface between the gastrointestinal and respiratory tracts, where it forms a circumferential low pressure seal around the glottis. This has advantages in terms of gas flow through the glottis to the lower airway. It is simple to insert and has a good role in airway management. The standard LMA is composed of medical grade silicone rubber and is re-useable, being sterilised. It consists of a curved tube opening at the distal end into the lumen of a small elliptical mask that has an inflatable outer rim. Two vertical elastic bars, mask aperture bars, are present across the opening to prevent obstruction of the tube by the epiglottis.

It is well known that laryngeal complications (dysphonia, aphonia, glottis oedema, laryngeal ulcers, granulomas, etc.) may develop after short-term or long-term tracheal intubation, when the effect of the LMA on the larynx has not been fully studied.

We compared the condition of the mucous membrane, vocal function and incidence of sore throat, hoarseness in 80 patients when using the LMA and ETT 24 hours after the operation. 40 patients were studied at the age from 15 to 70 years old without getting along laryngeal and pharyngeal pathologies, who had undergone planned gynaecological and urological operations with general anaesthesia using the LMA. The control group was composed of 40 patients having undergone analogous operations with the ETT use.

To control the position of the LMA after insertion and cuff inflation we used fibreoptic laryngoscopy. When the LMA was in its ideal position, the epiglottis and oesophagus were outside and the laryngeal opening was totally within the rim of the LMA. When the epiglottis was within the proximal rim of the LMA, the tip of the epiglottis was downfolded toward the larynx, and the lateral aryepiglotic folds were infolded toward the larynx; these distortions of the epiglottis partially obstructed both the distal end of the LMA tube as well as the larynx. The airway was improved after more correct insertion of the LMA. The oesophagus was clearly visible in three patients. These data reinforce the recommendation by Brain that the LMA in all cases does not protect against aspiration of gastric contents.

All the patients were examined by indirect laryngoscopy and electronic laryngostroboscopy before operation and in 24 hours after it. The laryngostroboscopic investigations made of 40 patients with the LMA showed that after operations all patients` vocal cords preserved their original appearance, synchronism of vibrations, the latter having, equal amplitude and frequency. «Stroboscopic comfort», full glottic closure and transition of the mucous membrane of the vocal cord free margins was observed in all the examined patients. In 9 cases out of 40 with the ETT phonatory vibrations of the vocal cords were not synchronous in frequency and amplitude 24 hours after operations. Amplitude of vibrations became relatively less, movements - weaker and the phenomenon of transition of the mucous

membrane in the area of the cords` free ridges was absent. Use of the LMA was followed by mild sore throat in 7 patients and after the ETT use - by mild in 9 and moderate sore throat in 10 patients, hoarseness in 3 cases. Hyperaemia and moderate oedema of the vocal cords were observed in three last cases. There was slightly painful swallowing in two patients in Group B due to mild epiglottis laceration.

Compared to the ETT when using the LMA pathological changes of the vocal cords and mucous membrane of the larynx were insignificant and short-term and vocal function had not practically changed.

FRONTO-NASAL CANAL RECONSTRUCTION AFTER ITS DAMAGE

N.A. Zakharova
Rostov on Don

The author shares her experience in plastic surgery of the nasofrontal duct with lyophilized femoral artery with successful results in 6 patients.

ON THE INFLUENCE OF AUTONOMIC NERVOUS SYSTEM UPON NASAL MUCOSA IN PATIENTS AFTER CRANIOCEREBRAL TRAUMA.

A.V.Zaitsev
ORL Department of State Medical Academy, Dniepropetrovsk, Ukraine

Nasal autonomous nervous system imbalance was found in patients with craniocerebral trauma to induce prevailance of vagotony in many cases.

IX Annual Assembly of International Academy of Otorhinolaryngology – Head and Neck Surgery(IAO – HNS) October 25-27, 2000, Amman

IX Annual Assembly of IAO-HNS took place in Amman, the capital of Jordan, October 25-27, 2000 within the framework of the Second International Congress of Jordanian Scientific Society of Otorhinolaryngology and the Fifth Annual Assembly of Panarabic Federation of Otorhinolaryngological Societies (ARABFOS).

The Conference was held under the patronage of His Majesty King of Jordan Abdulla II in the premises of the Royal Cultural Center. Twenty four Members of the Academy participated. The Assembly was inaugurated by President of the Congress, Chairman of Jordanian Scientific Society Professor Fawzi Saheb. President of the Academy Professor Marius Plouzhnikov on behalf of the Academy expressed his profound gratitude to the Organization Committee of the Congress for the exquisite hospitality and warmth the participants had experienced from the hosts. He also pointed out with satisfaction that all the Academy's Members had brought their papers to be presented at the Plenary Sessions of the Congress.

Academy held its organizational sitting at which the schedule of future Academy's Assemblies was approved as well as the participation of the Academy in the activities of IFOS in Cairo, IAO-HNS being a full Member of that authoritative organization.

At the Scientific Session of the Academy the following lectures were delivered :

Prof. A.Lopotko (Saint Petersburg) – "Sensibilized Speech Audiometry"

Prof. K. Jahnke (Essen) – "Biomaterials and Biomechanics in Ossicular Chain Reconstruction"

Prof. V.Bykova (Moscow) – "The Waldeyer's Lymphatic Ring"

Prof. G.Tavartkiladze (Moscow) – "From Cells Function Towards Hearing Aid Fitting and Cochlear Implantation"

Prof. M. Zargi (Ljubljana) – "Postoperative Treatment of Advanced Head and Neck Cancer with Simultaneous Combination of Radio– and Chemotherapy".

Prof. B. Schmelzer (Antwerpen) – "Treatment of Otitis Media: Sense and Nonsense about Antibiotics".

Prof. F. Stucker (Shreverport) – "A Clinical Review of 326 Perichondrial Cutaneous Grafts".

Prof. Th. McDonald (Rochester) – "Midline Destructive Lesions of the Nose".

Prof. Yu.Ustjanov (Lipetsk) – "New Method of Functional Cosmetic Correction of the Deviated Nose".

All the lectures were thoroughly discussed and cordially received by the audience, including my lecture and the rest of the Academy's Members.

The diversified cultural Programme was arranged for the participants of the Assembly: a magnificent reception at the Islamic Hospital, an instructive excursion with sightseeing of the city of Amman, visits to the ancient Roman city of Jarash, a trip to Nebo mountain, to Dead Sea and Petra. All the Members of the Academy feel it their sacred duty to express their deep thankfulness for the beautiful organization of the Congress to Professor Fawzi Saheb and their highest appreciation of the unprecedental atmosphere of friendliness that was reigning at the Congress.

Prof. Marius Plouzhnikov

Ascent to the Olympus of Otorhinolaryngology

Rais Kazhkenovich Toulebaev is a prominent scholar – an otorhinolaryngologist, occupational pathologist, clinicist and pedagogue – a noted public figure, the author of over 280 scientific works, 6 monographs, 2 text books in the state language, 16 methodological recommendations and manuals. His treatises dealing with otorhinolaryngology, hygiene and occupational pathology, clinical immunology and allergology, winning high appraisals, have been published in Moscow, Saint Petersburg, Irkoutsk, Riga, Kiev, Donetsk, Zaporozhie, Minsk, Tashkent, Kishinev, Bishkek, and in such countries as the USA, Germany, Jordan, Austria and Spain.

R.K.Toulebaev has attained remarkable results in investigating the effects of industrial production and environmental factors on the mucous membrane of the upper respiratory tract and on the organ of hearing. He contributed greatly to the development of the country's otorhinolaryngology, raising it to the international level and creating a school of otolaryngologists – occupational pathologists. It was with his participation that Republican conferences and congresses have been convened in Kazakhstan, as well as international symposia and sessions. A member of the All-Union Scientific Society of Otorhinolaryngologists, he represents adequately the Kazakh delegation at the congresses and conferences of the Commonwealth of Independent States and foreign countries. He was the first to investigate on a large scale in the Republic the effect of biological, physical and chemical factors on the ORL organs in people engaged in chemical engineering and agriculture, to study thoroughly the functional state of the respiratory system and to introduce etiopathogenetic methods for respiratory tract mucous membrane prophylaxis.

Today the name of Rais Kazhkenovich Toulebaev is familiar to nearly every medical worker and scientist in the Republic, as veil as far beyond its frontiers. His destiny is closely linked with that of the Kazakh intelligentsia, with the generation of postwar years. He was born en 15 January 1941 at Charsk, former Semipalatinskaya, station (the present East Kazakhstan Region) in the family of office workers, the Irtysh district and Semipalatinsk being his native place

His father, Kazhymoukhamed, a group II disabled person, a veteran of the Great Patriotic war, one of the first servicemen to liberate Berlin, decorated with numerous orders, medals and government awards, died in the postwar years. His mother, Karimova Boubyzhan, a teacher by education, was among the first women of the Kazakh intelligentsia to graduate from the Kazakh pedagogical college in Semipalatinsk, then an important cultural center. A highly cultured person she saw to it that all her four children receive higher education Her son Almas (Rais Kazhkenovich's younger brother) is a professor, a Doctor of Thechnical Sciences, head of the department of innovation and state scientific and technical programs of the Ministry of Power and Industry.

R.K.Toulebaev spent his childhood and school years in Semipalatinsk, an important cultural center. After finishing in 1958 in Semipalatinsk a Russian-language middle school No.19, he entered the medical faculty of the Semipalatinsk State Medical Institute, and graduated from it in 1964.

In the 1950-ies some prominent men of medical science were exiled from Leningrad and Moscow to Semipalatinsk, when legal proceedings were taken against them in connection with the notorious "Stalin's" "physicians' case". However, "every cloud, has a silver lining", as the saying goes. The so-called "enemies of the people" stepped up considerably the standards

of training at the new higher educational institution. Rais Kazhkenovich recalls warm-heartedly many of his teachers, such well-known professors as Finkelstein, Kalstein, Predtechensky, Touretsky, Dounaivitser, Vysotsky, Kogan and many other notable pedagogues selflessly devoted to their cause.

As early as in his student years Rais Kazhkenovich showed much interest in scientific research, and from the fourth year of studies was a member of the students' research circle at the ENT department.

After graduation he, at his own will, went to work in the countryside, in Kourdai district of Zhanbyl region (Georgievka village), serving there for over three years (until November 1967) as an otorhinolaryngologist. In 1965 he attended an otorhinolaryngology specialization course at the Alma-Ata Institute of Postgraduate Medical Training. It was then, in Alma-Ata, that prominent professors and specialists (B. V.Elantsev, M.S.Shanov, I.E.Ginzburg) noticed the young energetic doctor, appreciated his thirst for knowledge and propensity to carry out analitical work, and advised him to pursue postgraduate studies.

In 1967-1970 R.K.Toulebaev conducted postgraduate research at the ENT .Department of the Alma-Ata State Medical Institute. There, studying under the supervision of the country's well-known otorhinolaryngologist, Merited Scientist Professor B.V.Elantsev and the prominent allergologists – Academician N.D.Beklemishev and Professor V.S.Moshkevich, he mastered a number of reconstructive surgical operations on the nose, the accessory nasal sinuses, the pharynx, the larynx and the middle ear, as well as certain functional methods of investigation. R.K.Toulebaev's research works of the period dealt with the functional diagnosis of the conditions of the upper respiratory tract mucous membrane, the problems of allergy, immunity factors and sensibilization to tobacco at tobacco enterprises.

In 1972 he defends his candidate's thesis "The condition of the upper respiratory tract and sensibilization to tobacco in tobacco-manufacturing workers" (clinico-experimental investigations).

In 1972-1975 R.K.Toulebaev held the position of a junior and, afterwards, senior associate of the Research Institute of Regional Pathology, the Ministry of Health, of the Kazakh SSR. While working in the Institute's Department of Occupational Diseases, he participated in numerous expeditions, studying the health of workers engaged at the chemical and chemico-metallurgical enterprises of Kazakhstan. Joint integrated investigations were conducted under his direction and with his participation at the Zhambyl superphosphate and phosphorus plants, as well as at Novo-Zhambyl and Shymkent phosphorus plants and at the borate establishment in the Inder settlement of Gouriev District, the findings used as a basis for occupational disease forecasting and prophylaxis.

In 1975 R.K.Toulebaev was appointed Head of the Science Department of the Ministry of Health of the Kazakh SSK. Acting in that capacity, he manifested fully his talent as an organizer in setting up new research establishments and laboratories, and scientific branches, and in making preparations for convening in Alma-Ata the WHO international conference on first medicosanitary aid, which was presided by the ninister of Health of the Kazakh SSR Academician T.Sh.Sharmanov.

In 1977-1982 R.K.Toulebaev worked as a senior research associate of the Research Institute of Regional Pathology. In 1982 he was again invited to work in the central office of the Kazakh Ministry of Health, heading a responsible sector for planning research and evaluating its efficiency. During that period of over five years he was fortunate to fulfill important tasks of the Minister of Health, Academician Moukhtar Alievich Aliev and the Chairman of the Academic Board of the Ministry, the Merited Scientist Professor M.I.Dauletbakova.

In 1987 R.K.Toulebaev was appointed Head of the Ust-Kamenogorsk Department of Occupational diseases of the Research Institute of Regional Pathology. Within the framework of the Department he organized a Laboratory of Immunology. The staff of the Ust-

Kamenogorsk Department studied in all aspects the problem of saturnism, of the etiopathogenetic prophylaxis of lead poisoning. Under the direction of R.K.Toulebaev research was conducted on contract basis at the largest industrial enterprises of the East-Kazakhstan Region: Ust-Kamenogorsk and Leninogorsk integrated lead and zink plant, the Gloubokov copper smelting plant, the All-Union Research Institute of Non-ferrous Metallurgy, a machine building works, the Serebriansk Plant of Inorganic Compounds, the Tekeliisk Integrated Lead Plant, the Taldy-Kourgan Factory of Lead-Acid Cells, and at other installations of the national economy.

In 1990 R.K.Toulebaev organized the East Kazakhstan "KRAMDS - Densauly" center and became its director, being transferred in 1991 to the Alma-Ata head corporation.

In 1992 R.K.Toulebaev was appointed Head of the Medicobiologic Department of the Certifying Commission at the Cabinet of Ministers of the Republic of Kazakhstan and Member of the Certifying Commission Board. While occupying that position, he made an important contribution to the formation and consolidation of the state certification organs of the Republic and promoted introduction of new concepts in the certification and operation of specialized dissertation defence boards.

In 1993 R.K.Toulebaev defended in Saint Petersburg a doctoral thesis on "Clinico-immunological substantiation of early diagnosis and prophylaxis of respiratory intoxication in chemical and metallurgical production workers". In 1994 he received, the rank of professor and in 1995 was elected Corresponding Member of the National Academy of Sciences of the republic of Kazakhstan.

In 1993-1997 he was rector of the Shymkent Pharmaceutical Institute. On his own initiative the Faculty of Paediatrics was opened and that of General Medicine was reorganized into a Medical Faculty, the institution obtaining the status of a Medical Institute and, afterwards, that of South Kazakhstan State Medical Academy. While directing the Shymkent higher educational institution, he gave much consideration to expanding its facilities, raising the scientific potentialities and qualifications of the personnel and improving its general atmosphere, whereas before Toulebaev's nomination only 4 Doctors of Sciences were among the staff of the Institute, their number four years later rose to 17. Many of the younger teachers defended candidate's dissertations, and a postgraduate course was opened at the institute.

Extensive activities were undertaken by R.K.Toulebaev at the Shymkent higher educational institution aimed at establishing new clinical departments. In 1994 he set up the first department of otorhinolaryngology and two years later, based on the ENT and hygiene departments the first interregional conference was held on the ENT occupational pathology, with participation of Russian (Moscow, Saint Petersburg) and Uzbek (Tashkent, Samarkand) scientists.

In 1997 R.K.Toulebaev was appointed rector of the Akmolinsk State Medical Academy. There again his talents as an able organizer were fully manifested. Within a short period of time the number of Doctors of Science doubled. The first computer center was set up, and the Academy began issuing a quarterly Republican magazine "Astana Medizinaly Journaly". The first course of study for the qualification of Doctor of Medical Sciences was instituted, as well as two Doctor Dissertation Boards, and a Candidate Dissertation Board, for a total of seven specialities. An up-to date dissertation hall has been built, equipped with the latest apparatus and video equipment. 10 branches of Scientific Centers and research institutes were opened at the Academy. The efficiency of research has increased considerably. The Akmolinsk State Medical Academy headed by R.K.Toulebaev, now a recognized teaching and methodological center not only in the Northern district of the country, but in the Republic as a whole, has now three faculties, the fourth, that of Military Medicine is to be opened in 2002. 43 Doctors of Sciences and some 150 Candidates of Sciences are staff members of the Academy.

As an organizer of higher medical school, R.K.Toulebaev, a prominent scientist, has won recognition not only within the Republic, but also far beyond its frontiers. His fundamental research works deal with problems of labour hygiene and occupational pathology, occupational diseases of the upper respiratory tract and the organ of hearing, in particular. Well-known among his more important works are those concerned with the treatment and prophylaxis of occupational ENT pathology in workers of chemico-metallurgical enterprises. The scientist has proposed etiopathogenetic principles of treatment and prophylaxis of occupational diseases. His fundamental research essays on otorhinolaryngology have been published in Moscow, Saint Petersburg, Kiev, Minsk, Riga and Tashkent, winning high appraisals in Russia, the CIS and foreign countries. He has attained remarkable results in studying the physiology and pathophysiology of the upper respiratory tract mucous membrane and made a major contribution to the development of his country's medical science, specifically, in exploring occupational ENT pathology and measures of prophylaxis. He has raised the medical science of Kazakhstan to the international level and has created a large school of scientists – otorhinolaryngologists-occupational pathologists. He was the first in the Republic to study the condition of the mucous membrane of the upper respiratory tract and the organ of hearing in tobacco-planters during the harvesting and drying of tobacco, as well as in workers employed at fermentation plants and tobacco factories. He has made comprehensive profound studies of the respiratory pathology in people engaged in the production of phosphorous and boric mineral fertilizers, in workers of copper-, lead- and zink-smelteries, of mining, petroleum chemistry and chemico-metallurgical plants, as well as in those employed in the production of inorganic compounds, beryllium and rare metal elements. In so doing extensive use was made of the services of hygienists, occupational pathologists and clinicians. As a result of the integrated research, basic pathogenesis was determined of occupational alterations of the respiratory system, the clinical picture and course of the disease were studied, and the etiopathogenetic prophylaxis and monitoring of respiratory pathology were elaborated.

R.K.Toulebaev has published more than 280 scientific works, including two text books in the state language, five monographs and over ten methodological recommendations. He has received five patents and invention authorship certificates. 5 Doctors of Science and 18 Candidates of Science have gained their titles working under his supervision.

The versatile investigations by R.K.Toulebaev in the field of occupational pathology enjoy general recognition. They include monographs: "Pathology of ENT organs in cases of phophorus intoxication", "Chronic lead intoxication", "Occupational pathology of the upper respiratory tract and the organ of hearing", "Diagnosis and prophylaxis of inflammatory-dystrophic alterations of the respiratory tract", "Medicinal plants in otorhinolaryngology and pulmonology".

The results of studies carried out by R.K.Toulebaev and. his associates formed a theoretical and practical basis for organizing specialized sections and providing prophylactic otorhinolaryngological aid to the population in towns and large industrial regions.

R.K.Toulebaev participated in and delivered papers at the 7th, 8th and 9th All-Union Congresses of Otorhinolaryngologists, at a number of All-Union and All-Russia conferences, symposia and plenary sessions. In recent years he made reports at international congresses of otorhinolaryngologists in Jordan (Amman, 1998, 2000), Austria (Vienna, 1998), Germany (Berlin, 2000) and the USA (Washington, 2000).

Along with extensive research and pedagogical activities, R.K.Toulebaev carries on considerable organizational and social work, being Chairman of the doctoral dissertation board at the Akmolinsk State Medical Academy, editor-in-chief of the "Astana meditsinaly zhournaly" magazine, member of the editorial board of the magazines "Folia otorhinolaryngologiae et pathologiae respiratoriae", "Vestnik otorinolaringologii",

"Rosiiskaya rinologiya", member of the editorial board of the Republican magazines "Meditsinsky zhournal Kazakhstana", "Vestnik universiteta", "Ekologiya i zdorovie".

Convened on the initiative and with personal participation of R.K.Toulebaev were the 1st Interregional scientific conference of otorhinolaryngologists of Kazakhstan (Dzhambul, 1976), the 3rd Interregional scientific conference of otorhinolaryngologists of Kazakhstan (Aktyubinsk 1978), the 1st Republican conference of otorhinolaryngologists of Kazakhstan (Shymkent, 1979), the 1st congress of otorhinolaryngologists of Kazakhstan (Semipalatinsk, 1983), a regional conference of otorhinolaryngologists (Ust-Kamenogorsk, 1989), a republican conference on accupational pathology of ENT organs (Shymkent, 1993).

In 1999 R.K.Toulebaev held in Astana the 6th annual meeting of the International Academy of Otorhinolaryngology - Head and Neck Surgery and was elected Member of the Academy.

For long fruitful scientific, pedagogical and social activities R.K.Toulebaev has been decorated with the USSR badge "For excellent health service" and the medals "Veteran of labour" and "Astana".

R.K.Toulebaev's great erudition and high culture bound by his love for the fine arts and music, his open-heartedness and affability have earned him true prestige, the respect and warm affection of his colleagues, numerous disciples and friends. The remarkable and distinctive destiny of Rais Kazhkenovich is inseparably linked with his family. His wife, Mariya Tourysbekovna, a microbiologist by profession, has brought up three children. Their son, Samir Raisovich, has graduated with honours from the Faculty of Medicine of the Kazakh State Medical university and is at present working in the USA (Ohio) as a family doctor. Their daughter, Gaukhar Raisovna, also a graduate of the Kazakh State Medical University is now completing her studies at the Economical Faculty of the Academy of Governmental Service of Russia. The junior son, Olzhas, is studying at the Kazakh Rational Academy of Music in Astana, directed by the outstanding personality the People's Artist of the Republic of Kazakhstan, the world's Artist, Professor Aiman Mousakhodzhaeva.

The Corresponding Member of the National Academy of Sciences of the republic of Kazakhstan, Member of the International Academy of Otorhinolaryngology - Head and Neck Surgery, Member of the Academy of Medical Sciences, International Academy of Higher School Sciences of the Republic of Kazakhstan, as well as of New York Academy of Sciences, Doctor of Medical Sciences, Professor Rais Kazhkenovich Toulebaev appears before his contemporaries as an eminent scientist, an otorhinolaryngologist and occupational pathologist, a pedagogue, a mentor and a public figure.

National Academy of Sciences

Academy of Medical Sciences of the Republic of Kazakhstan

International Academy of Otorhinolaryngology - Head and Neck Surgery

International Academy of Higher School Sciences of the Republic of Kazakhstan

Otorhinolaryngology Society of the Republic of Kazakhstan

IN MEMORIAM

ВИКТОР ФОМИЧ ФИЛАТОВ. (1932-2001)

26 апреля 2001 года перестало биться сердце выдающегося ученого, создателя научно-педагогической и клинической школы, непревзойденного врача-клинициста, хирурга **Виктора Фомича Филатова.**

Болезнь оборвала его многогранную жизнь, полную новых творческих планов и устремлений в будущее. Виктора Фомича всегда отличало необыкновенное трудолюбие, желание работать, как можно лучше.

Виктор Фомич Филатов родился в 1932 году в селе Казаче-Рудчекское Белгородской области (тогда Курской). В 1946 году окончил 7 классов Гур-Казачанской средней школы Золочевского района Харьковской области. С 1947 по 1951гг. обучался в медучилище Южной железной дороги в г.Харькове. Высшее медицинское образование получил в Харьковском медицинском институте, будучи персональным стипендиатом, окончил его с отличием в 1957 году. По направлению работал врачом-отоларинголом в г.Ахтырке, Сумской области с 1951 по 1961гг. В 1961г. поступил в аспирантуру на кафедру ЛОР-болезней, а в 1964 г. защитил кандидатскую диссертацию "Состояние ЛОР-органов при облучении организма гамма-радиацией, кровопотере и комбинированном воздействии". Ассистент, доцент, а с 1971г. заведующий кафедрой, Виктор Фомич владеет всеми методами диагностики ЛОР-болезней и оперативными вмешательствами в области головы и шеи. В 1974 году защищает докторскую диссертацию "Материалы к изучению патогенеза хронических (полипозных) риносинусопатий. В 1975 году утвержден в ученом звании профессора.

Среди научных изысканий большое место занимает изучение проницаемости гистологических барьеров ЛОР-органов в норме и патологии (лучевая болезнь, кровопотеря, воспалительные и аллергические процессы верхних дыхательных путей), что позволило дать развёрнутую картину структурных, биохимических и функциональных механизмов ее нарушении, а так же путей их коррекции. Большой вклад Виктор Фомич внес в проблему клинической ринологии, в изучение патогенеза риносинутов, вазомоторного ринита, хронического тонзиллита и разработку новых, эффективных способов лечения. Много внимания уделено репарации тканей уха после оперативных вмешательств, предложены способы влиянии на них с помощью экзогенной костной РНК, препаратов прополиса, физических методов воздействия.

Виктор Фомич Филатов занимает ведущее место на Украине по созданию новых методов использования сверхнизких температур, лазерного излучения, ультрафиолетового и лазерного облучения крови, магнитотерапии, лазерной акупунктуры.

Высокоэрудированный хирург Виктор Фомич хорошо зарекомендовал себя в хирургическом лечении отогенных и риногенных осложнений, а также онкологических операциях области головы и шеи.

Личный богатый опыт Виктор Фомич Филатова отражен в более 300 печатных работах, 20 изобретениях и 75 рацпредложениях, успешно внедренных в практическое здравоохранении в виде: методических рекомендаций и информационных писем по новым методам диагностики и лечения, в том числе на 4-ом уровне внедрения, о чем

свидетельствуют дипломы и серебряная медаль ВДНХ, участие в международных конференциях и конгрессах. С 1993г. Виктор Фомич признан действительным членом Украинской академии национального прогресса, а с 1994г.- академиком Международной академии оториноларингологии – хирургии головы и шеи. С января 1995 г. присвоено звание Заслуженного деятеля науки и техники

Украины. Виктор Фомич являлся председателем областного научного общества отоларингологов, был членом редакционного Совета "Журнала ушных, носовых и горловых болезней" и "Вестника оториноларингологии", членом специализированного защитного Совета при Киевском КИК отоларингологии им. А.И.Коломийченко, с 1978 г. – декан стоматологического факультета Харьковского государственного медицинского университета, Виктор Фомич Филатов уделял много внимания подготовке высоко квалифицированных кадров отоларингологов. Под его руководством выполнено 18 кандидатских и 2 докторских диссертации, готовилась 1 докторская и 3 кандидатские диссертации. Изданы лекции по оториноларингогии для отечественных и иностранных студентов. Неисчерпаемая творческая активность, преданность делу, поиски новых путей в науке, чувство высокой ответственности, требовательность к себе и коллегам, организаторские способности – те прекрасные качества, которые характеризуют Виктора Фомича как ученого и человека.

Смерть Виктора Фомича Филатова – большое горе, постигшее нас. Особенно остро и тяжело переносят потерю знавшие его близкие, его соратники и друзья, его многочисленные ученики. С замечательным Человеком, Ученым, Врачом, Учителем пришли попрощаться и проводить его в последний путь сотни жителей города Харькова и Харьковской области, приехали коллеги, ученики и бывшие пациенты из других городов, имеете с сотрудниками института в почетном карауле у гроба стояли его ученики, выпускники института, студенты. Звучали слова глубокой благодарности Виктору Фомичу, а в них - боль и скорбь о безвременной утрате.

Светлая память о **ВИКТОРЕ ФОМИЧЕ ФИЛАТОВЕ** всегда будет в наших сердцах.

Коллектив клиники оториноларингологии
Харьковского государственного медицинского университета

Ректорат Харьковского государственного медицинского университета

Правление Харьковского областного научного общества
оториноларингологов

Киевский НИИ отоларингологии им. А.И.Коломийченко

IAO – HNS

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Название статьи должно находиться в центре. Только первое слово в названии и имена собственные должны начинаться с заглавной буквы. Название должно быть кратким и информативным. Не начинайте статей с артиклей или предлогов. Расшифровывайте сокращения, если они не являются общепринятыми.
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Reference
It would be helpful for some authors to read an excellent book that has been written for doctors whose first language is not English: "Writting Successfully in Science", M. O'Connor, Chapman & Hale, 1991, ISBN 041 446308.

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