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OLFACTOMETRY AND PATHOLOGIES

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Summary

We have demonstrated different kinds of olfactory pathologies studied in our ENT Center. We show the results obtained from 255 patients with differents ethiologies. The patients with olfactory and taste disorders treated, have demonstrated good improvement.

We show different kinds of olfactory pathologies studied in our ENT Center. The patients underwent olfactory protocol anammesis, ENT exploration, (fibroscopy and biopsy, if necessary), rhinomanometry, olfactometry, taste test, TAC of nose, sinus and brain, therapeutic check and follow-up (Fig. 1).

OLFACTORY PROTOCOL

-GENERAL ANAMNESI

-ENT EXPLORATION (Fibroscopy, Biopsy)

-RHINOMANOMETRY

-OLFACTOMETRY, TASTE TEST

-TAC (nose, sinus, brain)

-NMR

-THERAPEUTIC

-CHECK AND FOLLOW-UP

Fig. 1

384 olfactometries were performed of 255 patients with olfactory and taste disorders: 31 of the cases were discarded. Of the remaining 224 cases, 200 (Fig. 2 and 3)

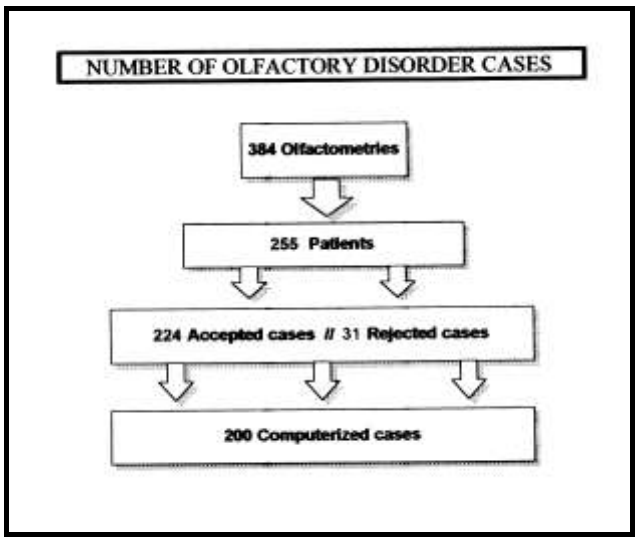

Fig. 2

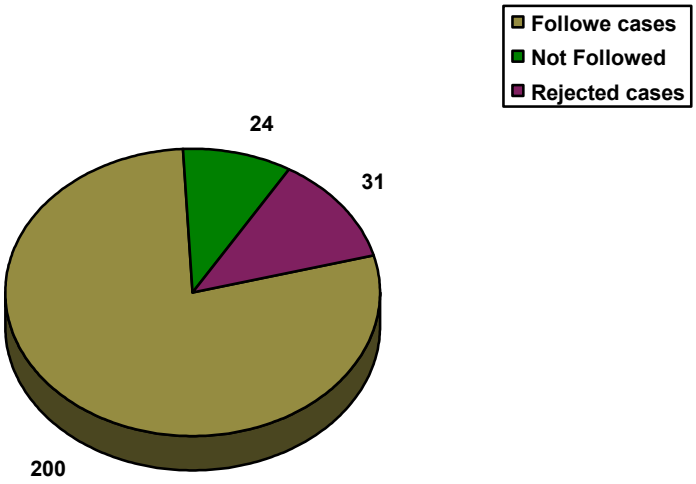

Fig. 3

were recorded with the following results: non-neoplasic tumors 21%, allergies 19%, neurologic disorders and job ethiologies 8%, infections 7%, psychiatric disorders and idiopathic cases 6%, trauma, endocrine and disorders in smokers, alcoholics and drug abusers 4%, nose deformities and other types of rhinitis 3%, and comprising the final 1% -pulmonary, dermatological, vascular disorders, x-ray therapy, chemical, pharmacological and surgical iatrogenia (Fig. 4).

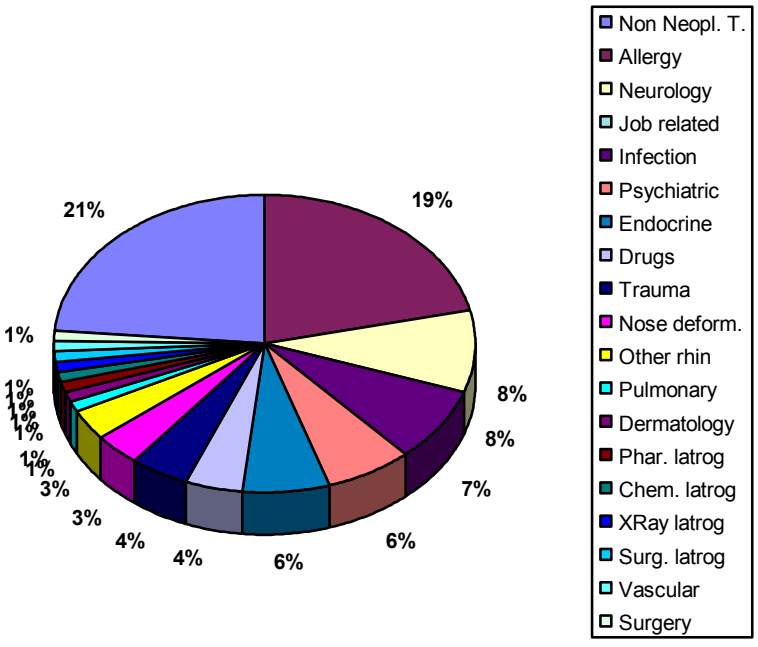

Fig. 4

As of now, we have obtained the following results: 52% of patients (103 patients) were not followed up because either they did not return, or they were in the process of waiting to take the next exploration (every 3 or 4 months) (Fig. 5).

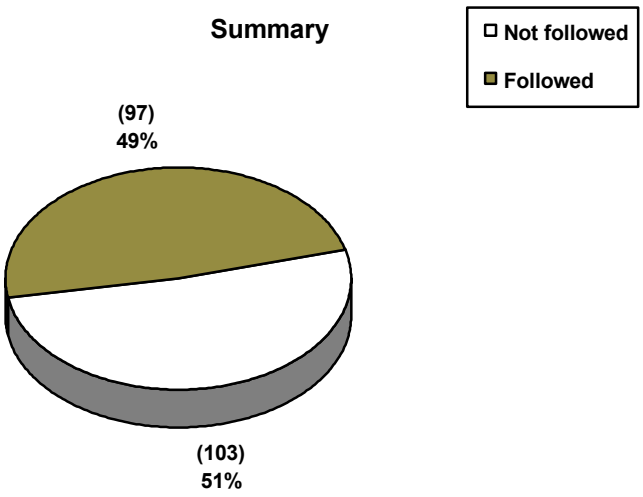

Fig. 5

Of the remaining 48% of patients (97 patients), 69% (64 patients) of these showed improvement, 19% of patients (21 patients) revealed no variations, and 12% (12 patient) displayed impairment. To conclude: tendency in to the patients with olfactory and taste disorders shows that 69% of the cases treated have demonstrated good improvement (Fig. 6).

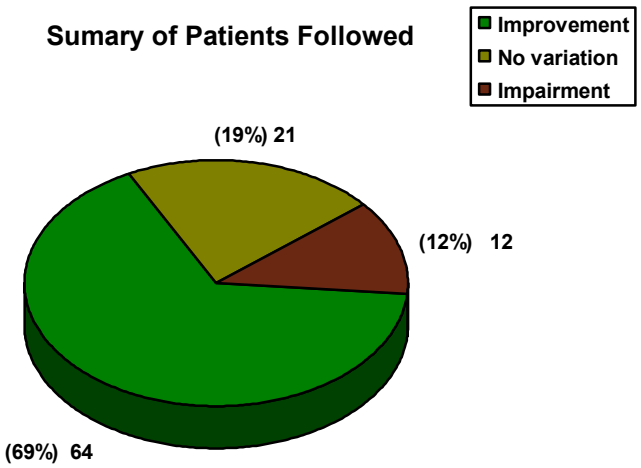

Fig. 6

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ULTRA SONOGRAPHY, COMPUTER TOMOGRAPHY AND MAGNETIC RESONANCE IN DIAGNOSIS OF SWELLINGS ON CHILDREN`S NECK.

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Swellings found on the neck of children have been recently more and more often the symptom of children disease. Determination of the correct diagnosis is not always easy. Apart from the standardised examination we also make additional examinations such as ultra sonography (US), computer tomography (CT) and magnetic resonance (MR).

For an ORL specialist the proper treatment is based on the differential diagnosis of the swellings. We may identify the following types of swellings on children' s neck:

1. congenital anomalies
2. the enlarged lymph nodes
3. acute and chronic inflammatory processes
4. thyroid gland disease, disease of thymus and salivary glands
5. benign and malign tumours and pseudotumours
6. other

The aim of this lecture is not the differential diagnosis of swellings on neck and therefore, it touches this problem only marginally.

There are about fifty children patients yearly admitedd to our Department of Pediatric Otorhinolaryngology, The School of Medicine Comenius University, Bratislava

in the last five years, with the swellings on their neck, of different etiology. Apart from the basic examinations we also make a routine ultrasonographic examination for all these patients and in individual cases the CT and MR examinations. Ultrasonography is a non invasive method of examination which is, thanks to its non invasive character, well accepted especially by small children.

For diagnosis of the medial or lateral cyst, atheroma and lymph nodes, the palpation and sonography examinations are usually sufficient. On the sonographic picture is the **cyst** an anechoic focus with a dorsal extended signal (Fig.1).

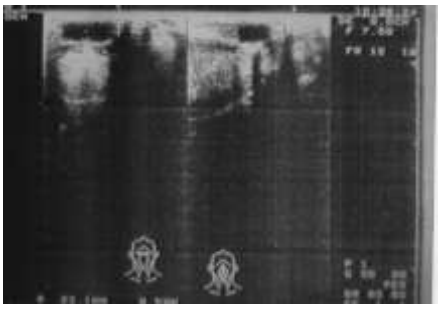

Fig. 1

The diagnosis of **atheroma** is difficult because its sonographic finding is depends on the density and consistence of the atheroma contents. The rough granular contents, through surgery operation found as curds or the caseous-like substance is by the sonography incorrectly found as the lymph nodes. The differential diagnosis against the enlarged lymph nodes is possible by the power doppler or a colour coded picture. It is easy to distinguish the atheroma from lymphatic nodes at the CT examination with contrast.

The palpation and sonography for the diagnosis of the **lymfangioma** is not sufficient. We should therefore make also the CT or MR examination.

The focus of a complex echogenity is seen on the picture. It is composed of numeral of hypo to anechoic islands which are sharply delimited from the surrounding area (Fig.2).

On the CT (Fig.3) of neck can be seen the expansion, sharply delimited from the surrounding structures. The stroma is coloured after giving the contrast to the patient but the spaces without the change in density can be noticed.

Fig. 2

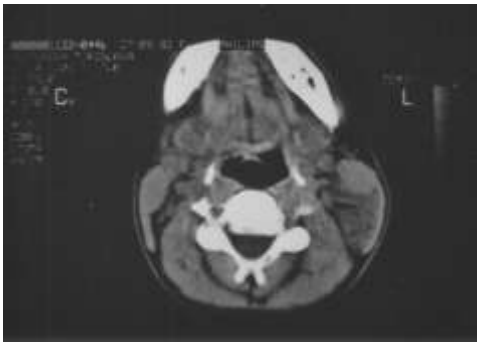

Fig. 3

Normally the **lymph nodes** are sonographically oval, hypoechogenic formations. Inflammated lymph nodes (Fig.4) are observed on the sonogram as oval or polycyclic, sharply delimited structures at the neck..

When there is an abscessing inflammation of lymph nodes (Fig.5) we can see in the sonogram the hyperechogenic surrounding of the node which represents the flegmona of the surrounding area with its centre being anechogenic, which means the presence of suppuration in lymph nodes. The CT examination with the use of contrast provides a clear picture of the inflammatory changes and is used above all at extensive inflammation processes as well as at determination of the extent of the focus and its relationship to the surrounding structures, such as large vessels.

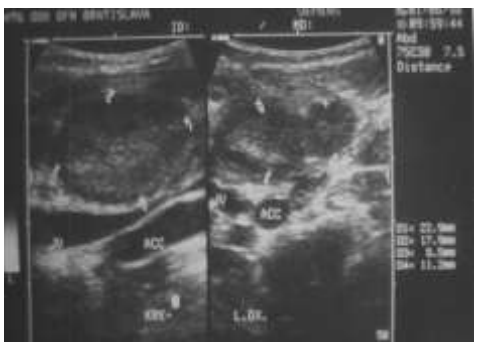

Fig. 4

Fig. 5

From our experience: when comparing the inflammatory lymph nodes with the malignant changed lymph nodes e.g. at the **malignant lymphomas** (Fig.6), the lymph nodes may appear the same but they have their margins hypoechogenic and their inner part is more

hyperechogenic. The metastasis in lymph nodes is even more hyperechogenic as the normal lymph node is.

During the radiotherapy or the chemotherapy they become even more hyperechogenic with the granular echotexture and they regressed.. We also may see the calcificates in them which proves the successful curative process.

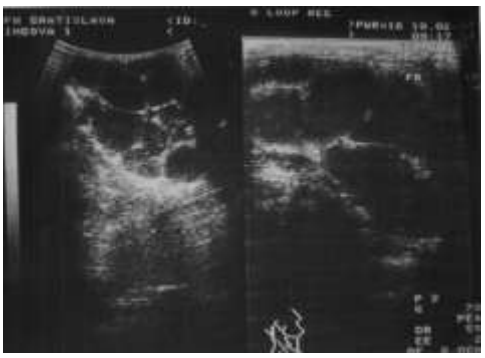

Fig. 6

Not always before the surgery extirpation of the solitary lymph node shall we assume the malignant origin even if we accept this possibility and therefore we don't make for all the patients a CT or MR before the surgery. Of course, when there are bigger swellings on the neck accompanied by apparent progression we make the CT or the MR examination because of their better diagnostic valve than sonography. It is important to be well acquainted with the patient's clinical stage for the proper interpretation of the CT and MR finding.

The diagnostics of malignities on the neck of children, like the embryonal **rabdomyosarcoma** is only possible on the histology basis. The sonography gives us the picture of a pathologically changed lymph nodes. The CT or the MR examination (Fig.7,8) will show very exactly the extent of the pathological changes. We can see an extensive formation, spreading down from basis with obliteration of the tonsilar and pterygoidal fossa on the right, into the parapharyngic space up to the level of piriform recessus. We can see the mass impressed into the naso and oropharynx with the deviation to left. A. carotis externa is comprimed and deviated dorsally and laterally, a.c. interna medially and v. jugularis is completelly comprimed.

After application of contrast medium the tumour increases its density to the density of soft parts e.g. the dorsal paravertebral neck muscles. The CT and especially MR examinations have nowadays a non substitutable position for the diagnosis of malignities.

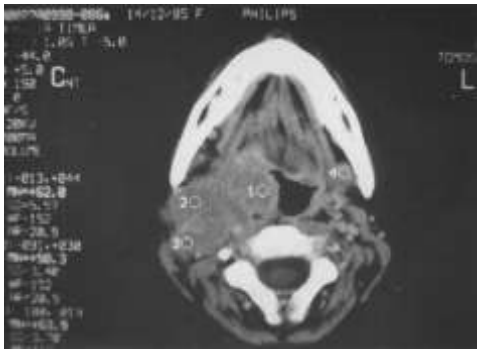

Fig. 7

Fig. 8

The primary diagnosis of **neurofibromatosis** (Recklinghausen´s disease) is very difficult.

Only the histological examination verifies the diagnosis. We usually think of a malignant tumour and thus we examine the patient according to the screening for the malignant diseases before the surgery. We therefore make also the CT or / and MR prior to the surgery intervention. We can see the US picture (Fig.9) at our girl-patient, reminding a pathologically changed lymph nodes.

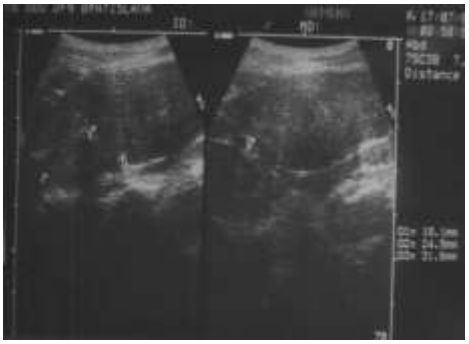

Fig. 9

On the CT and MR pictures (Fig.10,11) we can see an expansive process spreading from skull base to the upper mediastinum situated in the right parafaryngeal and bilaterally prevertebral space. The compression of pharynx from the right and back to the level of oropharynx up to the epipharynx, is present. On the level CI-2 the obliteration of foramen intervertebrale on the right is noticeable, without the marks of its spreading into the spinal canal. After application of contrast medium there is no increasing density. The precise verification of the focuses and their extent is, at this diagnosis, only possible with the help of MR examination.

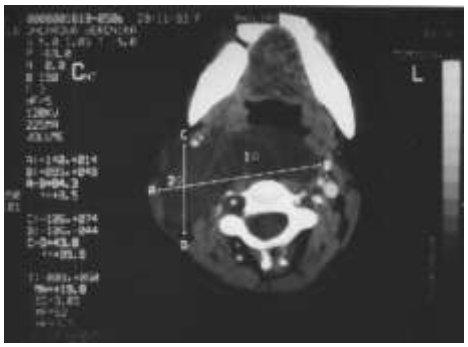

Fig. 10

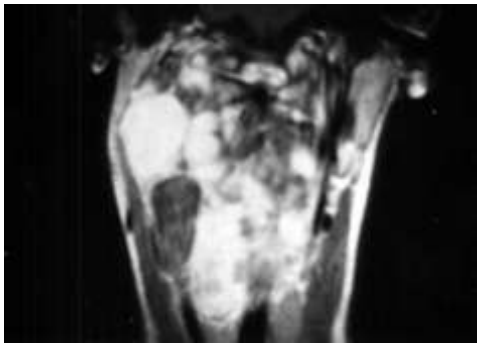

Fig. 11

Finally, we would like to emphasize that the sonographic examination is highly sensitive but at some affections of neck its specificity is low.

In the cases where it is not possible to examine the whole pathologic process reliably with the help of US we make the CT and MR examination.

The diagnostic contribution of the CT and MR examinations and their information value is dependent on the radiologist's erudition, his interpretation skills and his co-operation with an otolaryngologist.

Only an experienced physician regularly devoted to this topic is a contribution for the proper differential diagnosis of the neck swellings.

SPEECH DETECTION AS REVEALED BY THE LATE AUDITORY EVOKED N 170 POTENTIAL

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ABSTRACT

The purpose of this study was to evoke and identify cortical potentials after auditory word stimulation without the test persons´ cooperation. 20 healthy young adults were investigated. Monosyllabic test words were selected from the Freiburger Speech Comprehension Test (German). An equivalent noise stimulus for every test word was produced digitally by changing the signs of the digitized words randomly. Average potentials and the difference curve of speech and noise evoked potentials were calculated. The difference curve had a speech specific component 170 ms after stimulus onset (N 170). This potential differs significantly from other event related potentials. It occurs before the entire presentation of the stimulus and cannot reveal the understanding of the semantic contents, but is regarded as an electrophysiologic equivalent of the distinction between speech and non-speech, i.e. speech-detection.

Background

The measurement of evoked potentials is an established diagnostic tool for the clinical assessment of the auditory function both of the inner ear and the acoustic nerve and of central auditory processing as well [1,11,26,28]. Two different kinds of evoked potentials have to be distinguished. Stimulus-related potentials SRP are determined by the physical parameters of the stimulus. Event-related potentials ERP depend on the information they convey, physical parameters of the stimulus are less important to evoke ERP [21]. SRP are used for standard audiologic and neurootologic purposes such as the determination of the hearing threshold [22] or the integrity of the acoustic nerve [10]. Beside a certain degree of vigilance the registration of SRP demands no cooperation of the person examined, whereas in ERP the test subject usually has to fulfill different tasks from counting differences of the stimuli presented [30,32] to special motoric performances e.g. pressing buttons when recognizing stimulus differences [13] or semantic incongruencies [10,17]. So ERP usually test complex processes which may be compiled of auditory processing, cognitive and motoric functions. These methods demand the test person´s ability to cooperate and it is obvious that they are only of little clinical relevance for pedaudiologic purposes or for the examination of handicapped persons. So the diagnostic gap of audiologic electrophysiologic methods is that we are unable to evaluate speech perception without the cooperation of the test person.

The purpose of this study was to find out whether in healthy test subjects specific auditory potentials can be evoked and identified after speech stimuli. The only task for the test person was to keep a normal degree of vigilance.

Materials and Methods

We examined 20 healthy young adults (10 women, 10 men, mean age 27 ± 5 years) without audiologic or neurologic defects. Prior to investigation puretone and speech audiometry, tympanometry and otoacoustic emissions were measured and revealed normal auditory function in all test persons.

The test persons were seated in a comfortable armchair in an electrically and acoustically shielded room. Potentials were derived between ipsi- and contralateral mastoids (M_1, M_2) and the vertex (C_z). The forehead served as patients´ ground. Electrode impedances were below 3 kΩ.

The derived voltages were amplified by 20,000 and analoguely prefiltered by 4^{th} order bessel filters [1.6 Hz; 20 Hz]. Post stimulus EEG-intervals of 800 ms after stimulus onset were recorded. Raw data were digitally stored and analyzed off-line. EEG-segments with amplitudes of more than 100 mV were rejected as artefacts.

Auditory stimuli were presented monaurally by a headphone (DT48, Beyerdynamics) with randomized interstimulus intervals of 1-2 s. The test persons were instructed to sit still, preferrably with open eyes. Vigilance was controlled by a camera system. Total measurement times did not exceed 45 minutes.

Ten monosyllabic nouns with durations between 450 and 700 ms taken from the Freiburger speech comprehension test (DIN 45621) served as test words (see fig.1). The phonetic structure of the selected words should guarentee high neural synchronisation. Words matching this condition usually start with a vowel or a plosive and in a previous study it could be demonstrated that words starting with fricatives and sibilants are inadequate [11].

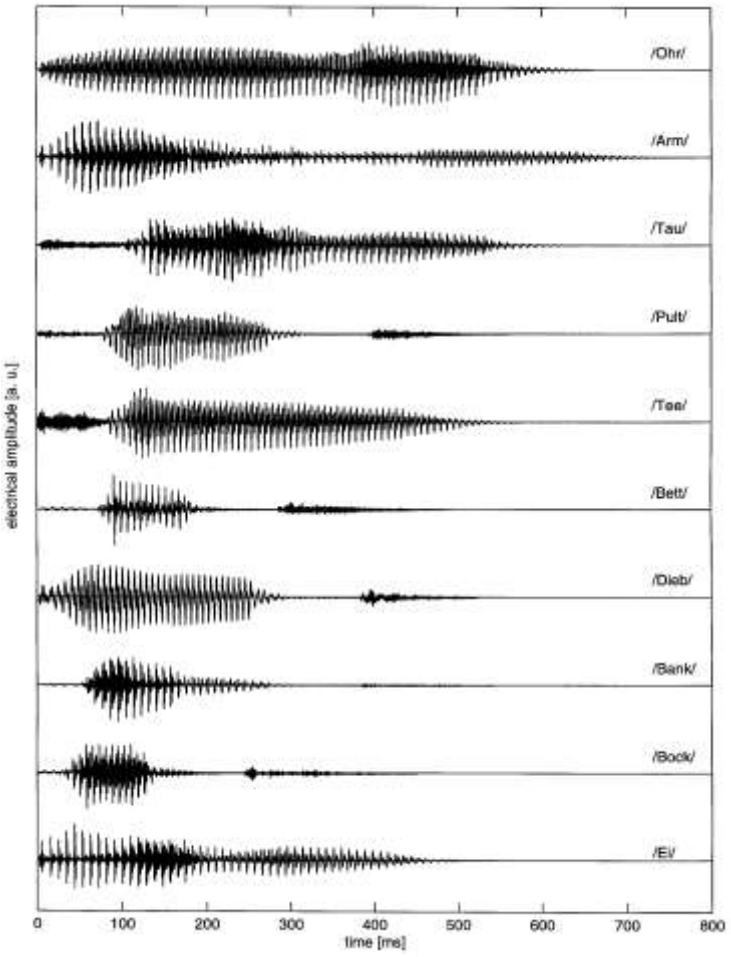

Fig. 12. Electrical amplitude of 10 monosyllabic German nouns taken from the Feiburger speech comprehension test (DIN 45621).

Corresponding to each test word an equivalent noise stimulus was created digitally (MATLAB®) by changing the signs of the digitized words randomly. This procedure keeps certain physical parameters of the words unaffected, e.g. the energy and the envelope, but destroys others like the frequency structure. Thus the semantic contents of the nouns disappears completely. An example of one test word and its noisied equivalent is shown in fig.2 as time representation and as spectrogram. While the time representation shows just slight differences the spectrogram clearly demonstrates the discrepancies between the speech and noise stimuli, such as missing formants in the noise stimuli. The spectrogram of the noise stimuli reveals no changes of frequency composition.

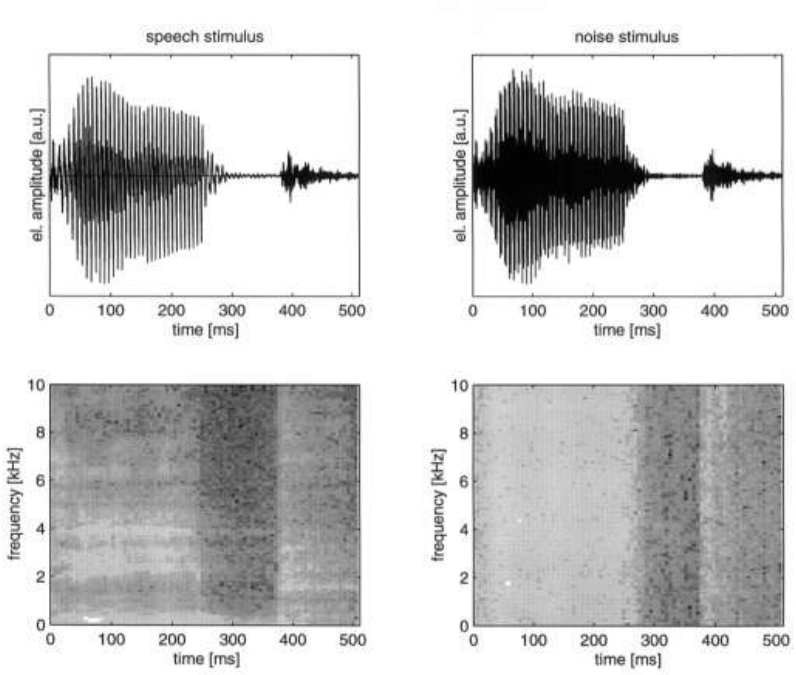

Fig. 2: Time representation and frequency structure of the word /Pult/ and its equivalent noise stimulus.

All stimuli were normalized on an identical peak level of 70 dB HL. The sequence of 250 speech and 250 noise stimuli was randomized. The stimuli were presented alternately with each word preceeding its equivalent noise stimulus. Each word appeared 25 times during one investigation set. Test-retest-reliability was checked in a consecutive measurement immediately after the first. Data were analyzed off-line. The data obtained were filtered by a wavelet filter bank as previously described [11]. Average potentials for each stimulus and the difference curve of speech and noise evoked potentials were calculated.

Results

Fig.3 (left) shows the average potentials for all words (solid line) and their equivalent noise stimuli (dashed line) as a grand average of all test persons. All potentials have the „common« structure of late auditory evoked potentials and are similar to those evoked by tone bursts (N100–P200–complex). A negative peak with a latency of about 100 to 180 ms after stimulus onset is followed by a positive peak with a latency of between 200 and 300 ms. In all cases both the negative and positive half-waves after word stimuli have a longer latency than those after their equivalent noise stimulus. The average potentials show no differences after more than 400 ms whereas in some individual cases deviations from the zero-line could be observed (data not shown). The latency of the first negative maximum depends on the structure of the test word or noise respectively. The more energy is conveyed in the beginning of the stimulus the shorter the latency and higher the amplitude is.

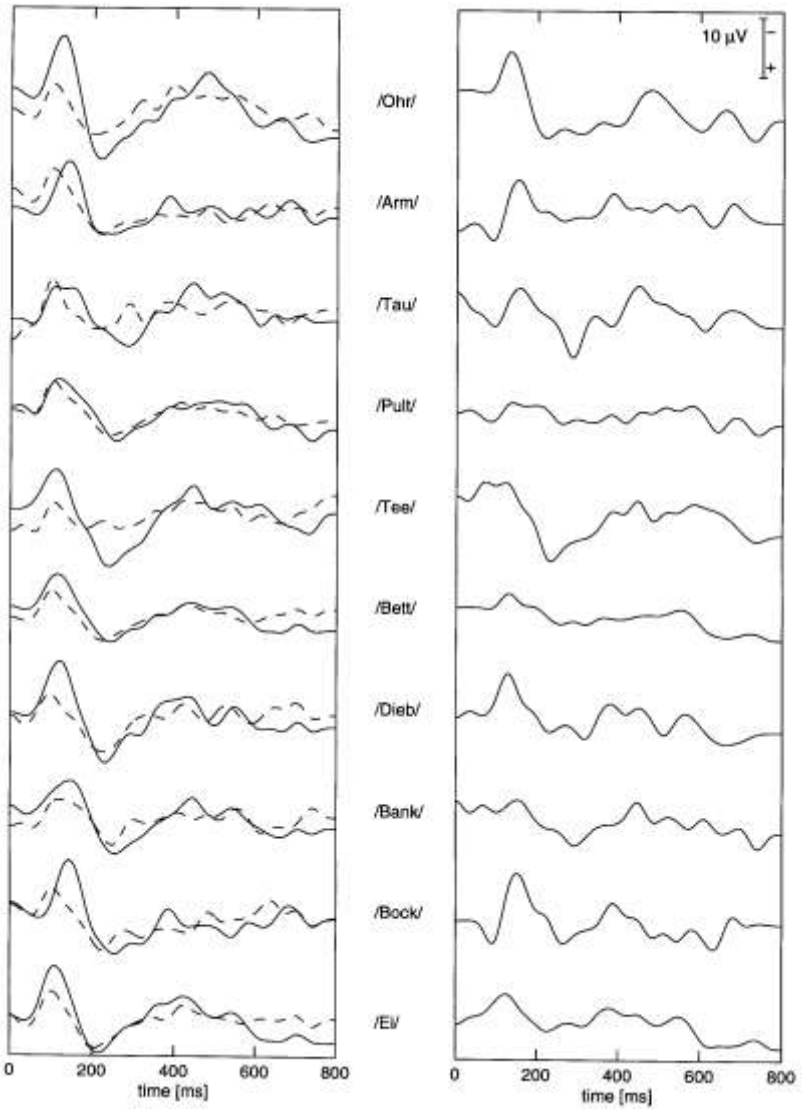

Fig. 3: Average potentials for all words (solid line) and their equivalent noise stimuli (dashed line) (left) and their difference curve (word – noise stimulus) (right).

The difference curves (word – noise evoked potential) are shown in fig.3 (right). They have a specific negative component at about 170 ms (N 170) after stimulus onset followed by a positive peak only in some words/noises with latencies of about 300 ms.

Fig.4 shows the overall average potentials for all speech and noise stimuli (left) of all test persons and the average difference curve (right). The curves represent the data obtained in a measurement between the right mastoid and the vertex after stimulation of the right ear (ipsi-lateral registration). No statistic differences were seen after contralateral registration. The same phenomenon was observed after left ear stimulation. The noise evoked potential has a negativity with a latency of 120 ms after stimulus onset and a positivity at 260 ms. The speech evoked potential exhibits a negative peak with a latency of 150 ms followed by a positive peak at 280 ms. Both kinds of potentials diminish after more than 400 ms. The difference curve does not differ from the zero-line until 100 ms after stimulus onset. Two different half-waves can be identified for higher latencies: at about 170 ms (174 $\pm$ 22 ms) a negativity occurs (N 170) followed by a positivity at 300 ms (P 300). The P 300 latency has a large interindividual variability of about 45 ms and could only be seen in 80 % of all measurements (data not

shown) whereas the N 170 proved to be a stable potential and could be recorded in all test persons.

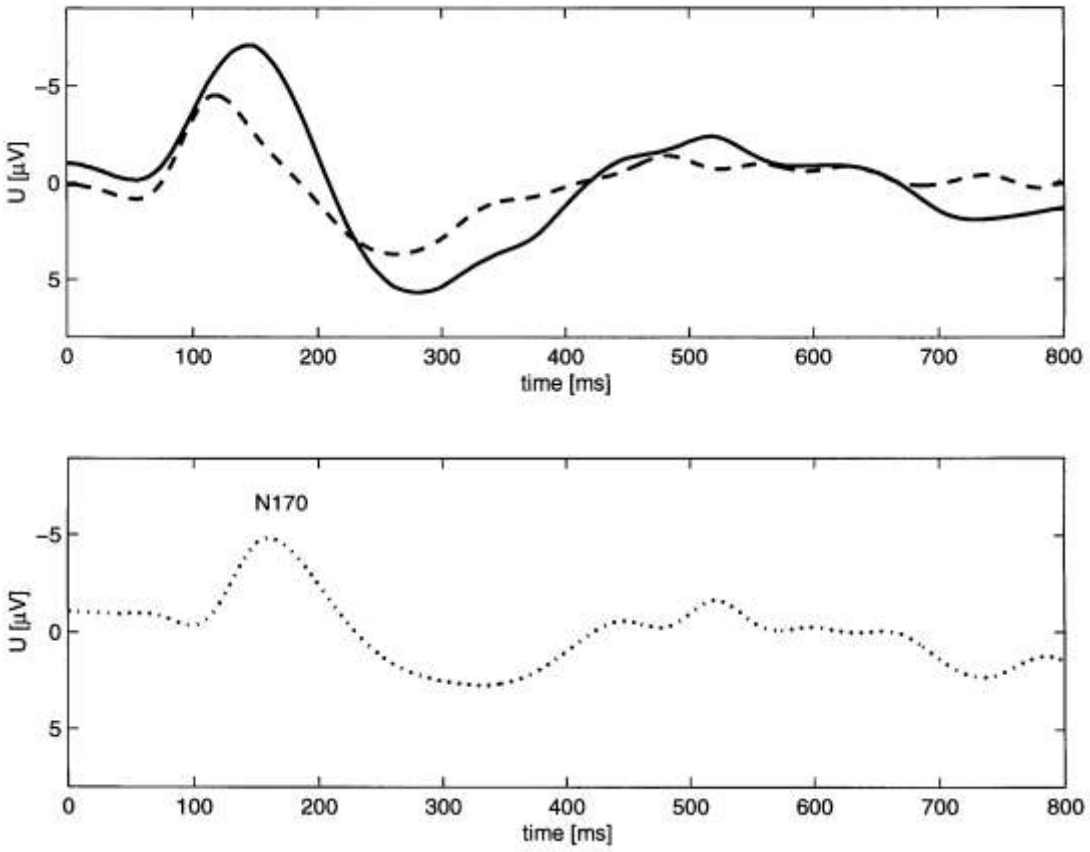

Fig. 4: Overall average potentials of all speech and noise stimuli of all test persons (top) and the average difference curve (bottom).

Discussion

Semantic understanding on the one hand and speech production on the other hand are the highest functions of cerebral speech processing. Many basic sciences such as anatomy and neurophysiology, but audiology and phoniatrics as well as clinical linguistics and psychology focus on this phenomenon. Nevertheless, there exists no commonly accepted „speech theory«. Speech processing is based on neural activity but many linguistic theories lack a neural correlate. On the other hand neuroscientific approaches to speech processing often have no adequate relation to linguistic principles [4,5,7,16].

For medical purposes the diagnostic approach to speech disturbancies covers both functional analysis and objective measurements such as imaging [16] and electrophysiologic methods [10,21], depending on the individual question. The problem of speech production disturbancies is not focused on in this paper. The question is how to ameliorate electrophysiologic methods for the investigation of speech perception by auditory evoked potentials. One aspect is to test a paradigm without the test person having to cooperate as this is the diagnostic gap of electrophysiologic methods for the medical diagnosis of speech perception disorders [2,6,23]. Another more theoretical aspect is the question of whether and how the electrophysi-

ologic findings match linguistic theories of speech perception, e.g. Hebb´s Cell-Assembly-Theory [3,8].

The earlier an auditory evoked potential occurs the more peripheral are its electric sources and the less doubtful its source can be located [29]. It can be assumed that the later an evoked potential occurs the more electric sources are involved and that these sources reveal electric activity of both hemispheres of the cerebral cortex, although it is common thought that speech is mainly processed in the left hemisphere [20,25]. Cortical electric activity implies a high degree of endogenous components of a late evoked potential [18,24]. Although the information of the stimulus determines the endogenous components of an evoked potential and the potential is called „event-related« - which implies an active cognitive evaluation of the information conveyed – most aspects of the underlying cortical speech processing processes are not committed to conscious functions [9].

The potentials in this study have a latency of late auditory evoked potentials and so it is assumed they are of cortical origin too. As they are not measured with a multi-channel equipment their sources cannot be identified exactly, but with no significant differences after right- and left-ear stimulation and ipsi- and contralateral measurement bihemispheric processing is likely. This is in agreement with the linguistic Cell-Assembly-Theory [3] and clinical studies in patients with aphasic syndromes [12,14,28] where the hemispheric distribution of both auditory and visual speech processing depends on the semantic contents of the stimulus: using nouns with a defined meaning requires bihemispheric electrical cortical activity [18,33] and this phenomenon is confirmed in this study. Obviously the N 170 potential reveals an aspect of speech processing with a bilateral cortical representation. Maybe in future brain electric source analysis BESA will give more information about the topography of the underlying cortical processes [19,29].

As proposed elsewhere [10,17] the difference curve of word- and noise-evoked potentials was calculated to eliminate unspecific processing components. So it can be assumed that the N 170 potential reveals speech specific auditory processing.

The N 170 potential has to be compared with the mismatch-negativity MMN [23)]. An auditory evoked MMN occurs after a slightly deviant stimulus in a number of identic stimuli („oddball-paradigm«). Its average latency is 235 ms and depends on the duration time of the stimulus [14]. The MMN can be measured without the test person paying attention to the deviant stimuli [2] and even during sleep [27] and in deaf patients equipped with a cochlear implant [24]. The MMN is regarded as an equivalent of cortical auditory discrimination processes [10,18,24]. The paradigm in this study is different. The stimuli are not only phonemes or puretones as in MMN studies but nouns with a defined meaning. The duration time of the stimuli is longer than the stimuli in MMN investigations and the latency of the N 170 potential is significantly shorter. Although not investigated systematically during sleep the „on-line« observation during the measurements indicates that a reduced vigilance influences the N 170 potential. Using the MMN paradigm it is impossible to find different latencies when presenting different phonemes as standard stimulus. The MMN is determined by the likeliness of the two different stimuli. In contrast to the stable configuration of the MMN after different phoneme stimuli the N 170 differs when comparing the potentials after stimulation with different nouns and it is independent of the number of stimuli and their numerical relation. These different configurations of the N 170 may be due to a different neural synchronisation and thus indicate that there exist significant exogenous components of the potential. On the other hand it might be caused by a different activation of cell-assemblies during early cortical

speech processing. Altogether the N 170 seems to reveal another aspect of speech processing than the MMN.

When comparing the N 170 potential with other auditory evoked ERP than the MMN such as the Processing Negativity PN [2], the P 300 [32] or the Contingent Negative Variation CNV [21] profound differences can easily be detected. All the other potentials require different stimuli, a high level of vigilance or even active cognitive or motoric actions and their latencies differ significantly from the N 170.

As the test paradigm and the latency differs significantly from those of other event related potentials the N 170 potential has to represent another aspect of cortical speech processing mechanisms. The N 170 potential has both endogenous and relevant exogenous components as it requires a certain level of vigilance but shows differences depending on the phonems of the single test words. The N 170 occurs before the entire presentation of the stimulus. So it is impossible that it reveals the understanding of the semantic contents of the test word. It is assumed that the N 170 stands for the discrimination between „speech« and „non-speech« and for this the term „speech-detection« is proposed. So it is justified to calculate an average curve of all words and noises respectively as the meaning of the N 170 is independent of the semantic contents of the single test words and the average curves represent the common features of all single word potentials.

Conclusions

1. The meaning of the N 170, the latency and the slight but significant differencies when using different test words can be explained on a neurophysiological basis and with the linguistic theory of cell-assemblies as well.

2. The procedure to measure the N 170 is simple, requires only little time and no elaborate cooperation of the test person.

3. It is suggested that it should be tested as a diagnostic tool in patients with speech perception disorders such as in aphasia and in speech development disturbancies in children with or without hearing disorders. In these patients the further clinical value could be tested by comparison with neuropsychological standard tests of speech comprehension.

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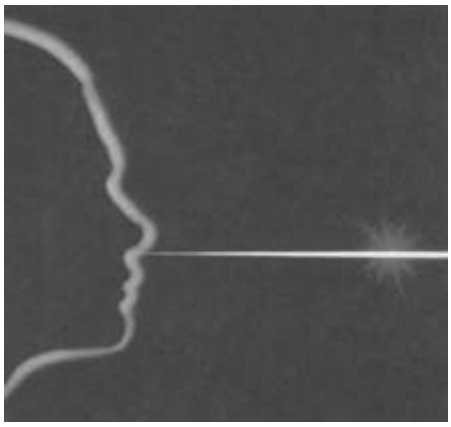

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Friday, March 5, 1999

Sinus and Nasal Polyposis

Stanley Shapshay, M.D., Moderator

A Therapeutic Strategy Around YAG Laser in Polyposis

Michel Jacobowicz, M.D.

KTP/532 Laser In Nasal Polyposis

S.K. Kaluskar, M.D.

Nasal Polyposis: Interstitial Laser Destruction (Basic and Clinical Considerations)

Marius S. Plouzhnikov, M.D

Diode Laser Polypectomy

Masaru Ohyama, M.D.

Questions and Answers

NASAL POLYPOSIS: INTERSTITIAL LASER DESTRUCTION (BASIC AND CLINICAL CONSIDERATIONS)

Professor Marius S.Plouzhnikov
ENT-HNS Department, I.P.Pavlov Medical University,
Saint Petersburg Russia

Theoretical considerations.

PROTEINS AND TEMPERATURE FACTOR

When heated to over 56°C the proteins denaturate, the process leading to a complete or partial loss of their natural properties, biological activity included. Further heating gives rise to coagulation, i.e. formation of large aggregations of protein particles (curdling) and then, at temperatures above 100°C, carbonization (charring) takes place. Such is the sequence of physicochemical alterations in proteins on exposure to a continuously rising temperature.

When heated in the range of low temperatures from 43^0C to 56^0C protein molecules undergo certain alteration, basically of a reverse character, but quite tangible for possible adjuvant thermotherapy.

Moreover, some authors have recently suggested that interaction of laser radiation with neoplastic tissue in the course of a low-temperature heating results not only in cellular necrosis but also in another form of cell death, viz., apoptosis (Beranek 1998: Chapman 1998). According to R. Chapman who has accumulated considerable experience in such management of uterine leiomyomas, it is evidenced by a gradual disappearance of the neoplasm within a few months, no growth of a residual tumour even under the effect of pregnancy, the lack of cicatricial tissue and the presence of giant cells in the area involved.

Apoptosis is a programmed (controlled) cell death, different from necrosis. That is a fairly new concept developing but in the past decade, although information on «spontaneous» death of body cells has been collecting throughout the 20th century. Examples are provided by regression of ovarian follicles, involution of the mammary glands following the lactational period, etc.

Originally, apoptosis was treated as a biological phenomenon unique to embryogenesis (Glucksman 1950), and it was only in the seventies and eighties that it was recognized to be a universal property of the living matter. An important contribution to the development of the concept was provided by Kerr's work (1972 -1980) on the induction of apoptotic alterations in the ischaemic liver and in the adrenal glands in the abscence of ACTH. It was by him, too, that the germ apoptosis was proposed.

LASER TYPES AND TISSUE-LASER BEAM INTERACTION.

Protein denaturation, coagulation and carbonization are destructive phenomena which can be achieved for clinical purposes through the agency of various physical factors. In the past decade, however, preference has been given to the laser beam, and there are sufficient reasons to do so. Laser radiation possesses a number of physical properties which permit precisionally acting upon tissue within the parameters specified by the operator. High-energy laser radiation at different wavelengths has found extensive application in surgery for evaporation, coagulation and, primarily, for cutting tissue. Intermittent (pulsating) beaming has proved a convenient means for biological welding, concrement fragmentation, etc.

For all practical purposes, depending on the manner of transmitting energy to the object, lasers are divided by convention into two groups: of «distant» or «contact» application. Owing to its characteristic feature of inducing a minimum reaction in the target-surrounding tissues, carbon dioxide laser holds in «open» surgery a leading position among «distant» quantum generators. However, radiation at a carbon dioxide wavelength is not transmitted via fiber glass. For this reason gaining acceptance in endosurgery were lasers with wavelengths of near infrared band, the beam travelling through quartz rod without appreciable heat losses.
Biological effects of «fiber» lasers associated with the development of deep necrosis and ulcers, as well as long-lasting adhesion, frequently with cicatrication, appeared to be less beneficial than the dosed spatially confined action on tissues of the CO_2 laser.
The problem was resolved when it was demonstrated experimentally, and afterwards clinically, that «contact» laser impact induces in tissues effects comparable to those resulting from irradiation with high-energy carbon dioxide laser. It was on the basis of the contact methods that the LITT technique was initiated, that of minimum invasive interstitial laser thermotherapy or, to be more precise, thermodestruction.

CONCEPTION OF LITT

Ideally, with application of the LITT technique the specified amount of pathological tissue should be exposed to irreversible degradation, i.e. protein denaturation or coagulation. Theoretically, that is possible only provided the tissue is heated to within 60° - 100°C throughout its entire mass. Hence it follows that the amount of the tissue undergoing destruction will depend on the temperature drop, a gradient decreasing uniformly from the epicenter of the heat-up towards the periphery, provided the optic properties of the tissue are uniform throughout it. This proposition assumes the existence of a homogeneous tissue with uniform properties of transmitting and absorbing luminous energy. In the meantime, the temperatures at the epicenter should not exceed the critical values at which carbonization may get under way and inevitably impede the transmission of light from the center to the periphery. Moreover, to achieve maximum destruction, the luminous energy, and consequently the temperature factor, should travel uniformly in all directions (if no special restrictions prevail). For that purpose special diffusors at the fiber butt are employed.

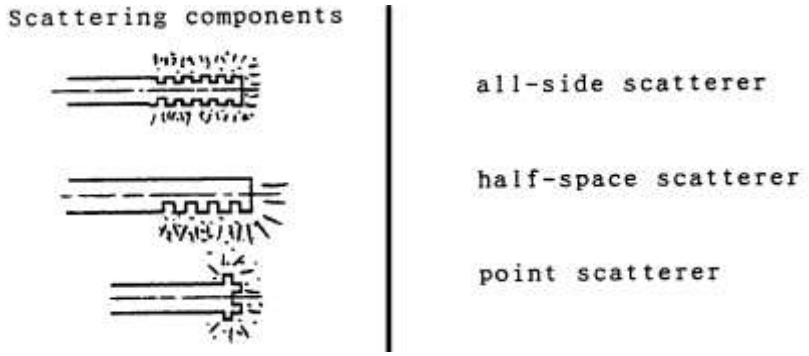

Fig.1 Scattering modalities of the manufactured bare tip fiber (Veiko et al,1997)

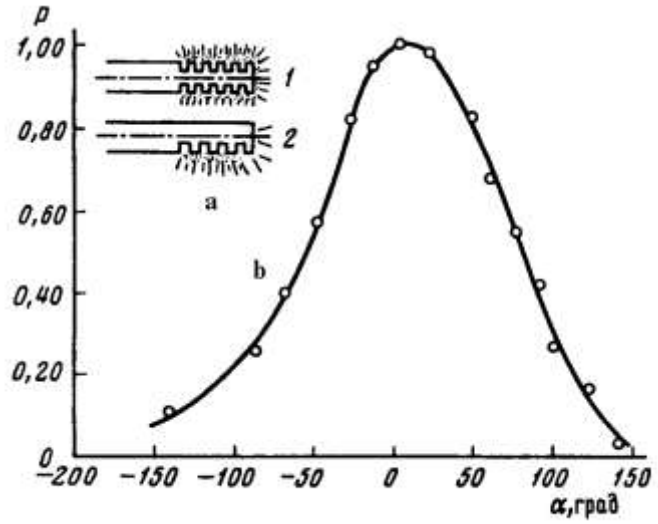

Fig. 2. a - scatterers: 1 - in all directions; 2 - in sector scattering; b - diagram of scattering in all directions (Veiko et al,1997)

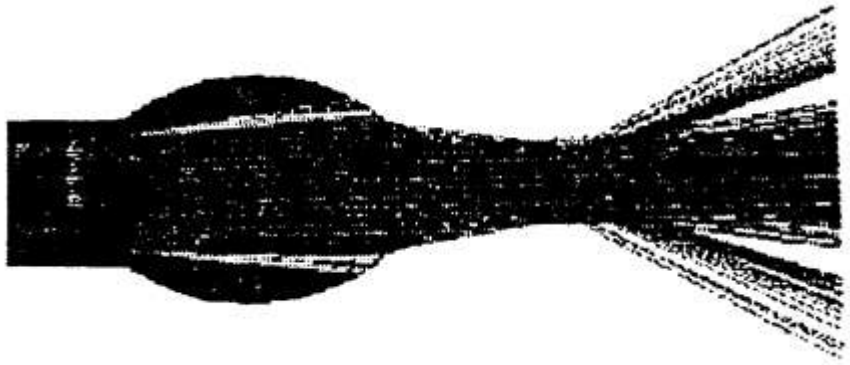

Fig. 3. Theoretical scattering of elliptical fiber-end lens (Veiko et al,1997)

However, considerable practical difficulties are encountered in achieving the general conditions outlined above. Firstly, represented in pathological formations, as a rule, are dissimilar structures with distinct optic properties. Secondly, their volume may often exceed the extent of destruction attainable with presently available means.

OUR INITIAL EXPERIENCE IN CLINICAL LITT APPLICATION.

By the moment of this presentation there had been found 360 papers in the system of Medline Internet,almost all of the being devoted to experimental LITT application with only a limited number of investigations referring to LITT as a clinical technique.

Indeed, LITT may prove to be an alternative to conventional surgery, particularly in cases of neoplasms anatomically difficult of access or those where operative access is fraught with traumatism, such as brain tumours. In this connection intensive search has been under way aimed at improving the LITT technique.

Dr. R.Chapman, one of the pioneers in developing the method and the first to accumulate extensive experience in interstitial thermal destruction of uterine fibromyomas, has achieved convincing results in this field. According to Dr. R.Chapman the neoplasms degraded completely and were replaced with whole muscular tissue without cicatrization, thus making possible normal delivery by patients of childbearing age.

In the event of large fibromas, simultaneously 8 to 12 fibres would be laparoscopically introduced into the tumor. Positive results were achieved in employing special stereometry of the arrangement of coagulation centers in neoplasms without superposition of coagulation foci. It was carried out in a way to interrupt microcirculation in tissues free from exposure to elevated temperatures. To the best of our knowledge, the first similar experience in otorhinolaryngology, as reported by T.J.Vogl(Berlin) at the International Symposium on Metastases in Head and Neck Cancer in Kiel, Germany in 1998, was concerned with laser thermodestruction of the skull base tumour and the parapharyngeal space.

IDEAS AND AIMS OF THE PRESENT RESEARCH.

The aim of the present study was to explore the possibility of applying LITT in cases of nasal polyposis, a condition requiring no commentary in professional intercourse. Nevertheless, certain specific points responsible for undertaking that work are probably worth mentioning.

Firstly, it was anticipated that the LITT would permit avoiding even a little hemorrhage and hence the tamponade with all of its negative features.

Secondly, the technique could be tested out in somatically complex cases, including those of concomitant cardiovascular insufficiency of various etiology, where conventional surgery every so often is inappropriate.

Thirdly, it was intended to take advantage of the method in cases of polyposis whenever it was technically difficult to operate or else surgery was fraught with the risk of complications. That is to say in the event of polyposis in combination with a deviation of the nasal septum and lower turbinates disgenesia, numerous preceding interventions, small polyps in the region of the nasal cavity fornix, etc.

Fourthly, owing to the relatively homogeneous structure of polyps and their accessibility (visual control and high incidence) they could be used as a model in the work on the LITT as a method.

EXPERIMENTS.

Prior to the clinical stage, experiments were carried out using special pastes (phantoms) devised by Professor A.I.Nevorotin. The pastes consisted of four ingredients: human hemoglobin, glycerin as cryoprotector, hen egg white and a stabilizing component (additive). Traced on such phantoms were the geometric parameters of «laser» coagulates as a function of the output power and the exposition for every specific type of fiber optic tool with light-scattering properties. Afterwards similar experiments were carried out in vitro on polyps under histological control.

EQUIPMENT.

Serving as the radiation source was the LTN-102 apparatus (Russia) of Nd:YAG laser, with a wavelength of 1,064 nm, operating continously over a wide range of power variation. The laser beam was aligned into a quartz fiber, 400 μ in diameter, protected with a polyethylene sheath. The tool used was a hollow thin cylinder, 1 mm in diameter: the fiber placed inside was secured with a clamp which also served as a hand holder. The outward-protruding part of the fiber (about 1 cm long) was freed from the protective polyethylene sheath and used as the working bare tip sunk into the tissue to be destroyed. It was thus found that by means of end face radiation, with no diffusor, however, after special manufacturing of the plunged part of the fiber, it was possible to obtain ellipsoid coagulates at an output power of 8-12 W and exposure of up to 3 min with no distinct carbonization zone at the site of the fiber tip-tissue contact provided the fiber tip plunged into tissue was slowly drawn outward.

OPERATIVE PROCEDURE.

Application anesthesia with 10% lidocaine solution proved adequate in every case. LITT was employed with the patient in the sitting position as while traditional anterior rhinoscopy. The optimal situation was one when the fiber tip could be inserted into the polyp pedicle or the adjacent necked part of the polyp. In such cases a single exposure could be sufficient. Whenever for anatomical reasons (stenosed nasal cavity) the operative field was not adequately observable, the surgeon had to resort to several exposures, trying to draw the whole of the visible part of the polyp into the zones being coagulated. Fairly indicative from the viewpoint of visual control over the appearance of the coagulate was the change in colour of the polyp tissue which in the course of thermodestruction was turning milky white. After the operation no attempts were ever made to remove at once the coagulated parts of the polyp mechanically, with snares or nasal forceps. As a rule, 3 or 4 days after the intervention the polyps were spontaneously expelled by nose-blowing. At times repeated LITT operations had to be performed either when new polyps were «shed» from the ethmoidal labyrinth in the postoperative period or when it was not feasible to expose all the polyps in the nasal cavity to the LITT procedure in one operation due to the large scale of the process. In the latter case spontaneous expulsion of coagulated polyps by nose-blowing was difficult to attain and they were removed with nasal forceps prior to repeated surgery. The 3-4 day period for cleansing the nasal cavity of coagulated polypous tissue is empiric and purely conventional. Oftentimes the expulsion of polyps may occur earlier and not only due to tissue necrosis (protein coagulation and denaturation zones experiencing both the direct effect of the temperature factor and the profound disturbance of the microcirculation bed and, consequently, of tissue alimentation with ensuing tissue dystrophy and cell death) but also owing to the individual reaction to the intervention on the part of the patients. LITT is a «one-day» type of surgery, and many patients at home, eager to precipitate the events, tried to expel the polyps by forceful nose-blowing. In some individual cases their attempts were successful. However even among patients with a blood coagulation pathology (Werlhof′s disease, hemophilia, etc.) there were no cases of nasal bleeding under such circumstances.

CLINICAL MATERIAL AND RESULTS.

Altogether we have operated on 32 patients (20 men and 12 women) ranging in age from 49 to 75 years. Clinically, the situations were similar in that all other surgical techniques involved various difficulties, including the refusal of patients to undergo traditional surgical treatment as they had had in the past. The postoperative follow-up periods being one-year long at most and the number of observations quite limited, we would be hardly justified now in discussing the clinical efficacy of LITT in cases of nasal polyposis relative to other methods. At the same time the possibility must not be ruled out of changes in the local immunoreactivity resulting from postoperative absorption of protein substances in the exposed zones. There is no doubt, however, that LITT is easily tolerated by patients and from the surgical point of view in a number of cases it offers decisive abvantages over the methods of conventional management.

ON PATHOGENETIC SUBSTANTIATION OF INTEGRATED THERAPY OF INFLAMMATORY ORBITAL DISEASES OF RHINOSINUSOFACIAL ORIGIN

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SUBSTANTIATION OF WORK

Inflammatory conditions of the nose, accessory sinuses and skin of the face occasionally result in severe orbital and cavernous sinusal complications (1, 2). The importance of managing the pathology is emphasized by communications in the literature on failures of treatment which could not prevent loss of vision or even death of patients (3, 4).

Achievements of present-day bacteriological diagnostics have radically changed our views of the causative agents responsible for pyo-inflammatory diseases of the nose and skin of the face and hence for intraorbital complications (5). Thus, according to certain authors, non-clostridial anaerobic infections account for 50 percent of the total isolated microorganism count (6, 7). A detailed "microbe landscape" attending sinuitis is represented in a publication of the American Academy of Otolaryngology-Head and Neck Surgery Foundation (8). Thus, the principal causative agents of acute sinuitis are Hemophilius influencae (38%), Streptococcus pneumoniae (37%), less frequently Streptococcus pyogenes (6%), Branhamella catarrhalis (5%), Alpha Streptococci (3%) and Gramnegative bacilli/mixed anaerobes (3%). In cases of chronic rhinosinuitis and suppurative exudate aerobes and anaerobes are found in approximately equal proportions. The former comprise Staphylococcus aureus (17%), Streptococcus viridans (14%), Hemophilus influencae (10%), Neisseria species (8%), Staphylococcus epidermidis (7%), Streptococcus pneumoniae (5%) and E. coli (4%), whereas the latter consist of Peptostreptococci (34%), Corynobacteria (23%), Bacteroides species (23%) and Veilonella (17%). These were the data we were guided by in selecting antibacterial drugs for the purposes of treatment, inasmuch as the low standards of bacteriological research in our republic preclude relying on the results of suppurative exudate studies. Besides, the results of a bacteriological test and determination of the reaction of an isolated microbe to specific antibacterial drugs are oftentimes belated, which is impermissible in view of the patient's condition.

An important role in the etiology of inflammatory orbital diseases of rhinosinusofacial origin belong to the peculiarities of the venous drainage of blood from the face and accessory nasal sinuses. Nasal cavity veins form in the deep regions of the face such plexuses which link them to the neighbouring regions. The venous drainage of blood is known to follow three major routes: (1) via v. facialis inferior et posterior and further via v. facialls communis which drains into v. jugularis interna; (2) via plexus venosus fosse sphenopalatina and further via v. jugularis interna; (3) via v. v. oftalmica which drain into the cavernous sinus.

In the pathogenesis of inflammatory orbital conditions the emphasis is generally on the contact pathway of infection to the orbit, just a passing mention being made of the venous route. And that is the case in spite of the fact that certain publications contain evidence of the inflammatory process sometimes extending as a result of progressive inflammation along the venous bed (9, 10).

Our tests have shown that in the event of the infection extending along the venous pathway it is the pathological reaction to inflammation - disseminated intravascular coagulation (the DIC syndrome) - that develops first. The intravascular clots in the immediate vicinity of the focus of infection may be infected and serve as the starting mechanism of a progressive thrombophlebitic process along the pathway of the venous drainage of blood from the face (11, 13), which initiates a retrograde thrombophlebitic process capable of reaching the orbital veins (13). Suppurative thrombolysis is attended by formation around the veins of microabscesses which may further blend, leading to the development of an orbital phlegmon. Thrombophlebitis of a similar origin develops in the orbit, yet as a secondary phenomenon and after infection has reached it by the contact pathway from the affected paranasal sinuses.

MATERIALS AND METHODS

This approach to the etiology and pathogenesis of inflammatory orbital conditions of rhinosinusofacial origin made us modify the methodological foundations of treatment by provision of integrated antibacterial therapy and the use of agents aimed at deblocking the microcirculation (direct anticoagulant, antiaggregant of throm-bocytes, fibrinolysis activator). The integrated antibacterial therapy involved the administration of a third generation cephalosporin drug (claforan, fortum, langoceph, epocellin), a second or third gradation aminoglycosid (gentamycin sulfate, tobromycin sulfate, amicacyn, sisomycin sulfate) and an agent acting on non--clostridial anaerobes (lincomycin or metronidasol). The anticoagulant therapy included heparin instillations either intravenous or subcutaneous around the umbilicus (most often 5000 units every 6 hours for 4 days and afterwards with a regular decrease of the daily dose by 5000 units until cancellation)*. Starting on the day of heparin dose reduction, with a view to preventing adverse consequences (14), we administered an antiaggregant - aspirin - in a dose of 0. 25 g once daily with subsequent cancellation, as well as a fibrinolysis activator - nicotinic acid - for internal use in a dose of 0. 05 g thrice daily or in the form of a 1 percent solution, intramuscularly, in a dose of 3 ml once or twice daily.

Such drugs were administered in combination with stream or drop intravenous infusion of 30 to 90 mg of prednisolone in the course of the first 3 days. While employing that therapy we never overlooked the fact that the efficacy of treatment depended to a great extent on elimination of the primary focus of inflammation. Thus, in cases of sinuitis we performed the maxillary sinus punction or the frontal sinus trepanopunction, as indicated, with subsequent irrigation with furacin solution and administration of a compound medicinal mixture based on a 5 to 10% synthomycin liniment. The composition of the mixture included the third generation cephalosporine, the second or third gradation aminoglycosid, metronidasol and hydrocortisone suspension. Wherever necessary, sanative surgical intervention was performed on accessory nasal sinuses. In the event of pustular conditions of the skin of the face or nose (furuncle, carbuncle, erysipelatous inflammation), the abscess was opened with removal of the necrotic core and subsequent drainage. Sanative surgical intervention on the primary focus of infection was combined, if necessary, with an operation on the secondary focus. In other words, where signs of a subperiostal abscess or an orbital phlegmon were present, orbitotomy was performed. In some eases the subperiostal abscess was opened after maxillary sinusoethmoidotomy with removal of the sieve plate and a part of the upper wall of the maxillary sinus.

In the course of 1990-1997 63 patients with orbital inflammatory conditions of the rhinosinusofacial origin treated as described in the foregoing were under observation at our clinic. In 33 of the patients they were due to acute or aggravating chronic sinuitis and in 30 others to pustular diseases of the skin of the face and nose. Among the latter it was furuncle in 23

* The doses of heparin and other drugs as indicated above are for adults; those for children are to be calculated according to age or weight.

cases, carbuncle in 1 and erysipelatous inflammation of the nose in 1. 16 patients were admitted with an orbital phlegmon which in 11 cases was associated with progressive thrombophlebitic lesion of the orbit and in 5 was due to contact penetration of the infection through the sieve plate of the ethmoid bone.

RESULTS AND DISCUSSION

Analysis of the treatment undertaken has shown that in 39 patients with thrombophlebitis of orbital veins with no purulent dissolution of the thrombi the signs of the disease were diminishing in intensity on the day following the beginning of medication and disappeared almost completely by the 5th or 8th day. In 5 patients the resolution of the inflammatory process in orbital veins was protracted and ended in recovery. In 2 patients with thrombophlebitis of orbital veins residual effects persisted, long-term follow-up observation revealing exophthalmos and some minor eye-ground alterations. The patient with thrombophlebitis of orbital veins and pterygopalatine venous plexus had residual effects in the form of a pastiness in the supra- and infratemporal fossae and a slight exophthalmos. The persistent alterations in those 3 patients were due to the hindered blood flow.

10 patients with suppurative sinuitis complicated by thrombophlebitis of orbital veins underwent a course of combined treatment. The management of rhinosinuitis by puncture was required in 8 cases, and the sanitating intervention on the maxillary and frontal sinuses with the opening of the ethmoidal labyrinth cells in 2. In 7 severe cases of orbital thrombophlebitis with phlegmon simulating signs a diagnostic orbitotomy was performed. Although no pus was obtained, the operation made it possible to relieve the tension of tissues in the orbit and thus improve the patients' condition. In 30 patients with orbital vein thrombophlebitis genetically linked with pustular diseases of the face the medicamentous therapy was combined in the overwhelming majority of cases with the opening of the furuncle and removal of the necrotic core, as well as with the incision and subsequent drainage of the abscesses.

16 patients admitted with an orbital phlegmon underwent orbitotomy. In one of the cases the operation was combined with enucleation of the eyeball. The last 3 patients were admitted not only with an orbital phlegmon but also with unilateral blindness, and one with pyophthalmia.

Thus, in 54 out of the 63 patients with thrombophlebitis of veins and an orbital phlegmon the vision and the ocular motility were restored and the caliber of veins on the fundus of the eye was normal or near-normal. In 5 out of the 63 cases there remained a slight exophthalmos and a wide caliber of veins on the fundus of the eye. In 3 patients the complication culminated in blindness: in two of the cases due to the neuritis of the optic nerve and in one due to pyophthalmia.

In summing up the analysis, it should be pointed out that the meteorological basis of combined treatment administered by us proved particularly efficacious in cases of orbital and facial vein thrombophlebitis without suppurative dissolution of the thrombi. It appears particularly important that, alongside a rapid regression of the symptoms of thrombophlebitis, as regards 21 of the patients there was no need to resort to surgical intervention on the accessory nasal sinuses, and in 8 cases the treatment could be confined to a double or triple irrigation of the sinuses with subsequent administration of a mixture of drugs on synthomycin liniment. It should be emphasized that most of the patients admitted to the clinic were in a very poor condition with distinct signs of a suppurative process in the accessory nasal sinuses and a severe form of thrombophlebitis of orbital veins. The upper and lower eyelids were congestively hyperemic, expanded forward and were tense on palpation. The lid slit was closed, and when forced open there was evidence of exophthalmos and, in some patients, chemosis. Recorded on the side of the fundus of the eye was marked plethora, considerable increases in the caliber of orbital veins and contraction of arteries, which testified hindered blood flow and increased tension of tissues in the orbit. Those signs of thrombophlebitis of orbital veins were combined

with a poor general condition: a marked local pain syndrome, high febrile temperature and other signs of a severe inflammatory process.

There is reason to classify the modernized therapy as fairly efficacious and recommend to employ it in cases of inflammatory orbital diseases of rhinosinusofacial origin.

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CONSERVATIVE SURGICAL INTERVENTIONS IN THE TREATMENT OF LARYNGOPHARYNGEAL CANCER

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A modified access to the laryngopharynx was developed based on anatomy-topographic studies using 54 cadavers. It differs from those commonly employed by an approach to the laryngopharynx widened by resection of one half of the hyoid bone and the posterosuperior angle of the thyroid cartilage plate subsequent to radical neck and submandibular region dissection with excision of the submandibular gland on the side of the lesion. It ensures satisfactory observability of the anatomical parts of the larynx, laryngopharynx and stomatopharynx, making possible controlled removal of the tumour from surrounding sound tissues when the larynx is intact and some part of it can be preserved. This approach enabled the authors to use the above-mentioned access as the basis of two alternative surgical procedures: resection of the laryngopharynx and larynx in case of a limited cancer or resection of the laryngopharynx, preserving the larynx, in the event of a locally disseminated cancer of the posterior wall of the stomatolaryngopharynx. The skin incisions used allowed treatment according to a radical surgical program, i. e. simultaneously performing operations on the primary focus and in the areas of regional metastases. 25 patients were operated with satisfactory results.

KEYWORDS: laryngopharynx, cancer of the laryngopharynx and posterior wall of the stomatolaryngopharynx, operations on laryngopharynx.

In most cases surgical interventions in the treatment of laryngopharyngeal cancer consist in extensive operations distinguished by traumatism, grave postoperative condition and long rehabilitation periods. The underlying reason is that over 70 per cent of the patients at the time of initial treatment have disseminated neoplastic lesions. At the same time, in some of such cases conservative operations may be performed with quite satisfactory results and, occasionally, proving more efficacious than organ resecting surgical procedures /4, 2, 1, 3/. Conservative operations provide for resection of the laryngopharynx and larynx or resection of the laryngopharynx with preservation of the larynx. Such procedures are indicated in cases of limited cancer of the upper regions of its medial wall, i. e. the external regions of

the larynx, provided the mobility of the larynx is preserved, for tumours of the aryteno- and pharyngoepiglottidean folds and the upper lateral regions of the epiglottis, as well as for lesions of the posterior wall of the laryngopharynx.

As regards conservative larynx preserving operations, two essential factors are of great importance: intimate anatomic connections of the laryngopharynx with the larynx, base of the tongue and the posterior lateral wall of the stomatopharynx, a well as early frequent metastasizing to regional cervical lymph nodes. Such anatomo-topographic and clinical features of malignant laryngopharyngeal tumours necessitate, during surgical intervention, a free access permitting reliable observability of the anatomical structures. This is requisite for determining the extent of the lesion for visually controlled excision of the affected part of the organ from surrounding sound tissues, as well as for neck dissection (i. e. for radical surgery).

Oropharyngeal access may be justified only in cases of limited tumours of the posterior wall of the stomatopharynx. Not furnishing a means of manipulating in the laringopharingeal region, it is not adequate in the case of disseminated lesions, when cervical pharyngotomies or pharyngotomies with dissection or resection of a part of the mandible are used.

Most of cervical pharyngotomies are based on that of Trotter's /12/, with access to the laryngopharynx being gained by resecting a part of the plate and the superior corniculum of the thyroid cartilage, as well as the greater horn of the hyoid bone.

In the last few years different modifications of the operation have been developed. Some authors recommend preserving the hyoid bone, others advocate resecting its greater horn still others prefer to resect the superior corniculum of the thyroid cartilage. Thus, in the case of extensive tumours of the posterior stomatolaryngopharyngeal and poor mobility of the hyoid bone it is recommended to resect its greater horn /3/, to perform posterolateral pharyngotomy, preserving the hyoid bone /8,11/ or to resect the superior corniculum of the thyroid cartilage /2,7/.

The above-listed variants of surgical intervention with their specific advantages and shortcomings have indeed enhanced the potentialities of the fictionally conservative surgery of the laryngopharynx.

Our anatomo-topographic and clinical studies have shown that, due to the rigidity of the edges formed by the hyoid bone and the larynx, a sparing treatment of the hyoid bone, especially without preliminary neck and submandibular region dissection on the affected side, will only admit of an inadequately controllable narrow operative field.

All things considered, we have developed two variants of conservative operations for laryngopharyngeal cancer which differ from the conventional techniques by skin incisions and lateral pharyngotomy with resection of one half of the hyoid bone.

MATERIAL AND METHODS

With a view to substantiating the modified access to the laryngopharynx, anatomo-topographic studies were conducted on 54 cadavers. They consisted in comparing the proposed access to the laryngopharynx with those most commonly used, by the following criteria: 1) the observability of anatomical regions and parts of the laryngopharynx and larynx, base of the tongue and the posterior wall of the stomatopharynx; 2) the width of the operative field and 3) the mobility of the larynx. Statistical analysis was performed with an IBM-PC XT computer manufactured by the Olivetti Co. (Italy) and a software package developed at the Kirghiz Institute of Oncology and Radiology. Pearson's X2 test was used to make statistical comparisons.

Two variants of conservative operations were developed on the basis of the modified access. Resection of the laryngo-pharynx and larynx was performed in 17 patients with limited stage T2 cancer of the laryngopharynx. The process involved the anterior wall of the pyriform sinus, the pharyngoepiglottidean folds and the superolateral regions of the epiglottis in 4 patients, the pharyngeal surface of the arytenoepiglottidean folds and the superior regions of the medial wall of the pyriform sinus in 8 cases, and the external wall of the pyriform sinus in 5. On examination, metastases to the cervical lymph nodes were found in 10 patients.

Resection of the laryngopharynx was performed in 8 patients with cancer of the posterior laryngopharyngeal wall, in 5 of the cases the tumour disseminating to the stomatopharynx reached the inferior region of the rhinopharynx. The TNM distribution of patients was as follows: T2NOMO - 3, T3NOMO - 2, T3N1MO - 3. The histological structure of tumours in all the patients operated on: keratinizing type of squamous cell carcinoma - in 21 cases, non-keratinizing type of squamous cell carcinoma - in 4.

In one of the two variants of the operation we used a skin incision resembling in shape a raised "hockey stick" and in the other - one similar to an inverted letter "S" (Fig. 1). Such

incisions terminate in the region of the jugular notch with oval skin dissection to form a cannulaless tracheostoma. The special skin incisions afford access to the cervical adipose tissue and the primary focus, and enable reliable suturing of the wound, while in the alternative case they make possible stomatolaryngopharyngoplasty.

Fig. 13. Skin incision lines: a continuous line for the first variant of the operation; the broken line for the second.

The operation proceeds in three stages:

Stage 1 - tracheotomy. Under local anesthesia on the right or left sides, in accordance with the localization of the tumour in the laryngopharynx, the lower portions of the incisions are made. The respiratory tract lumen is opened with a low base tongue-shaped incision. The resulting anterior tracheal wall flap is bent over and sutured to the lower edge of the wound, and a general anesthetic is administered.

Stage 2 - radical neck dissection or dissection by Cryle's method on the side of the lesion of the laryngopharynx, irrespective of the presence or absence of clinically identified metastases. This is followed by an incomplete autotamponade of the wound bed with the sternocleidomastoid muscle. The muscle is then flattened in the wound bed, the neurovascular fascicle is closed with a row of catgut sutures, and a free access is left to the latteral wall of the laryngopharynx /5/.

Stage 3 - a modified version of the anterolateral pharyngotomy with resection of one half of the hyoid bone, the posterosuperior angle of the thyroid cartilage plate and a visually controlled dissection of the affected regions of the laryngopharynx and larynx. To begin with, an access is gained to the posterior edge of the thyroid cartilage plate and one half of the hyoid bone is disengaged by dissecting the muscles attached to it (essential at this stage of the operation is cautious manipulation protecting the hypoglossal nerve and the lingual artery from injury and transection). The hyoid bone is transected, along the midline with Listen's tongs, and its half on the side of lesion is removed. Using the tongs, the thyroid cartilage plate is dissected so as to form its mobile posterosuperior triangle bounded by the superior corniculum, the lateral and 1/4 posterosuperior edges of the plate and the dissection line (Fig. 2). That part of the cartilaginous skeleton of the larynx is dissected subperichondrially. As a result, the larynx becomes more mobile, and the surgeon gains an adequate access to the laryngopharyngeal walls.

Fig. 14 Resection of one half of the hyoid bone and the posterosuperior angle of the thyroid cartilage.

Then the lumen of the laryngopharynx is to be opened. The location of the wall dissection is first determined in accordance with the site and extent of the tumour. It is to be outside the affected region of the laryngopharynx either at the level of the superior corniculum of the thyroid cartilage (with the process localized in the valleculae, pharyngoepiglottidean fold or superolateral regions of the epiglottis) or along the imaginary line forming an interface between the base of the tongue and the epiglottis (with the tumour localized in the pyriform sinus and on the posterior wall of the laryngopharynx). The subsequent opening of the pharynx up- and downward is carried out under visual control, its scope gradually increasing as the walls of the laryngopharynx are dissected. It is imperative that the dissection line should be removed at least 1.5-2 centimetres from the boundary of the tumour infiltrate. On gaining an adequate access, the mobile edges of the dissected laryngopharynx are separated, and at the same time the larynx is dislocated by pulling it forward and turning to the side opposite that of the neoplastic lesion. As a result the anatomical parts and regions of the laryngopharynx and larynx, as well as the inferior regions of the stomatopharynx, become adequately observable.

The tumour boundaries are further determined and the possibility is ascertained of performing a conservative surgical intervention, i. e. of an operation with preservation of a laryngeal stump for subsequent restoration of the dividing and respiratory functions. The principal stage of the surgical intervention is completed with excision of the affected regions of the laryngopharynx and resection of a part of the larynx (Fig. 3) or electroexcision under reliable visual control of the tumour of the posterior wall of the stomatolaryngopharynx reaching the prevertebral fascia. In the event of a minor defect of the tissues the pharynx is sutured securely, otherwise a minute lateral pharyngostoma is formed which closes spontaneously or is sutured with the local tissues at the next stage. Whenever appreciable defects are noted in the mucous membrane of the posterior wall of the pharynx, the pharingoplasty consists in suturing a lateral skin flap to the edges of the mucous membrane of the opposite side.

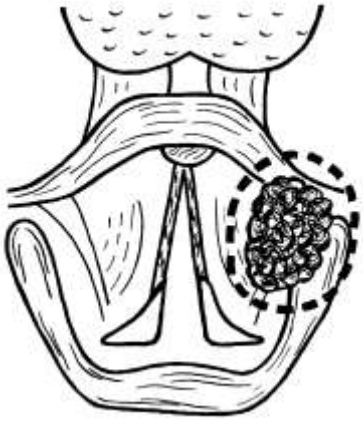

Fig. 15. Dissection of the affected regions of the laryx and laryngopharynx.

At the final stage of the surgical intervention the skin flap is replaced in its original position, a control drainage orifice is left opposite the sutured pharynx and a stable cannulaless tracheostoma is formed.

RESULTS AND DISCUSSION

Comparative analysis of different kinds of access to the laryngopharynx with lateral and transverse pharyngotomies, based on experiments on autopsy material, showed that the least number of visually identified anatomical structures are recorded in the case of the preservation or midline dissection of the hyoid bone, while the largest number is noted following resection of one half of the hyoid bone and the posterosuperior edge of the thyroid cartilage plate. The operative field width was the least in the case of an access with preservation of the hyoid bone and the greatest with the access used by us.

Out of the 17 patients operated on according to the first variant, 14 had the pharyngeal defect sutured securely, while in 3 others minor lateral pharyngostomas were formed which closed spontaneously later on. Pharyngeal fistulas developed in 6 patients, in 3 of those cases as a result of suppuration of of the operative wound. 5 of the 8 patients operated on according to the alternative variant had planned lateral pharyngostomas, and the rest - temporary minor pharyngostomas in the form of a spontaneously closing drainage orifice.

Suppurations of the operative wound in the region of the lateral surface of the neck was noted in 2 cases as a result of infiltration of saliva. Planned pharyngostomaplasty was performed using local tissues, 3 to 4 months after the principal operation.

Neck dissection was undertaken for reasons of prophylaxis in 12 cases and as a part of treatment of the other patients. 15 patients underwent a course of postoperative radiation therapy. Suturing of the cannulaleas tracheostoma was done within different periods of time. 3 patients underwent laryngectomy due to tumour recurrence, and 1 patient was not operated because at the time he once again sought professional help the tumour was incurable. Three of the operated patients refused to have their tracheostomas sutured.

At present 14 patients (56%) are alive, the follow-up time varying from 15 months to 8 years. 2 patients died of distant metastases, 1 of an intercurrent disease and the rest of incurable cervical metastases whose fatal development was due to their appearance and early fixation to the base of the skull and the internal carotid artery in 5 cases, and to the appearance in the region of fossa juguli and in the mediastinum in 1 patient. Finally, 2 patients seeking help too late died of extensively developed metastases in all groups of lymph nodes of the neck. From the foregoing it is evident that the proposed variants of conservative operations with modified anterolateral pharyngotomy yield satisfactory results.

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ORGAN PRESERVING SURGERY OF EPIGLOTTIS CANCER INVOLVING BASE OF THE TONGUE AND THE IARYNGOPHARYNX

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Possibility of organ preserving surgical interventions in some cases of cancer of the epiglottis involving the laryngopharynx and the base of the tongue is demonstrated. Histotopogram studies of laryngeal cancer have made it possible to develop a modified version of extensive horizontal resection of the larynx. The principal features of the operation are: upward surgical intervention; improved visual control over the ablastic resection of the affected parts of the larynx and laryngopharynx; the suturing of the operative wound with the formation of a stable cannulaless tracheostoma. 28 patients with epiglottic cancer and dissemination of tumour infiltrate as indicated above have been operated with satisfactory results.

KEYWORDS: cancer of the epiglottis, laryngopharynx and base of the tongue, horizontal resection of the larynx, laryngeal cancer histotopography.

Epiglottic cancer disseminates most frequently to one of the pyriform sinuses (34%), into the anterior epiglottic region (35%) and tongue valleculae (25%) /3/. Tumour from the anteroepiglottic region may further extend to one of the pyriform sinuses /1/.

In recent years much attention has been given to studying the possibilities of extensive organ preserving operations for tumours of such localization and dissemination. The advisability of such surgical procedures is justified by satisfactory remote results which compare well with those of laryngectomy /12, 6, 5, 11, 14, 16, 20, 21, 17/. Thus, according to E. Cerny and M. Rames /15/, in cases of disseminated vestibular laryngeal cancer the five-year survival rate following extensive horizontal resections was 42. 1% while after laryngectomy it was 36. 0%. The authors point out that operable regional metastases present no contraindication to an organ preserving surgical procedure.

The difficulties involved in performing extensive horizontal resections of the larynx are due to the large scale of surgical intervention in the upward and lateral directions, the need to exercise great caution to protect the hypoglossal nerve, as well as the high localization of the tumour.

In undertaking horizontal resections, many surgeons use as a means of access supra- and subhyoid pharyngotomies, making a downward resection /4, 12, 6, 13, 18, 19, 17/. The flaws of this method in cases of locally disseminated cancer of the epiglottis are the difficulties of visually controlling the course of the operation and the risks involved in pharyngotomy within a tumour affected site. Therefore, for extensive horizontal resection of the larynx we used an operation whose distinctive features are upward surgical intervention, removal of the tissue conglomerate together with the anterior angle of the thyroid cartilage, drawing the larynx towards the hyoid bone as much as possible at the final stage of the operation, formation of a cannulaless tracheoatoma, as well as early restoration of deglutition owing to the use of a special feeding table.

MATERIAL AND METHODS

With a view to substantiating the surgical intervention under review, a study was made of histotopograms of 139 larynxes or parts thereof within 10 horizontal levels with various primary sites and different dissemination of the process.

4475 sections 20 to 30 μm thick stained with hematoxylin-eosin or by Van Gizon's method were examined under the loupe orthe microscope with x80, 180 and 200 magnification. The findings made it possible to define the ablastic resection borders of malignant neoplasms, this knowledge indicating possible preservation of some anatomic structures in the course of laryngeal resections and consequently, the functional validity of the preserved part of the organ /9/.

A modified version of extensive horizontal resection was performed in 28 patients with locally disseminated cancer of the epiglottis. In 15 of the patients the lower border of the tumour marked off the lower third of the fixed part of the epiglottis as well as the anterior regions of the vestibular folds. The other patients had tumours extending to the middle third of the fixed part of the epiglottis and the vestibular folds. The tumours were noted to involve tongue valleculae and pharyngoepiglottic folds in 9 patients, the base of the tongue in 8 cases, the arytenoepiglottidean folds and, correspondingly, the upper parts of the medial wall of the pyriform sinus in 11. In every case the tumour invaded the anteroepiglottic region. Limited mobility of one of the arytenoid cartilages was found in 5 patients. The TNM distribution of cases was as follows: Ò4NÎÌÎ - 15, T4N1MO - 8, T4N2MO - 4, T4N3MO - 1. The keratinizing type of squamous cell carcinoma was diagnosed in 19 cases and the nonkeratinizing in 9. Prior to the operation 3 of the patients underwent a radical course of radiation therapy. Simul-

taneously with the operation on the primary focus, 4 bilateral and 9 unilateral cervical lymphodissections were performed.

Separate skin incisions were made for the principal stage of the operation and tracheostomy. The main incision was starfed from the middle of the distance between the chin and the hyoid bone, continuing downward until the level of the upper edge of the cricoid cartilage (Fig.1à). In the event of metastases in the lymph nodes, lymphodissection was carried out through a horseshoe-shaped incision (Fig.1b).

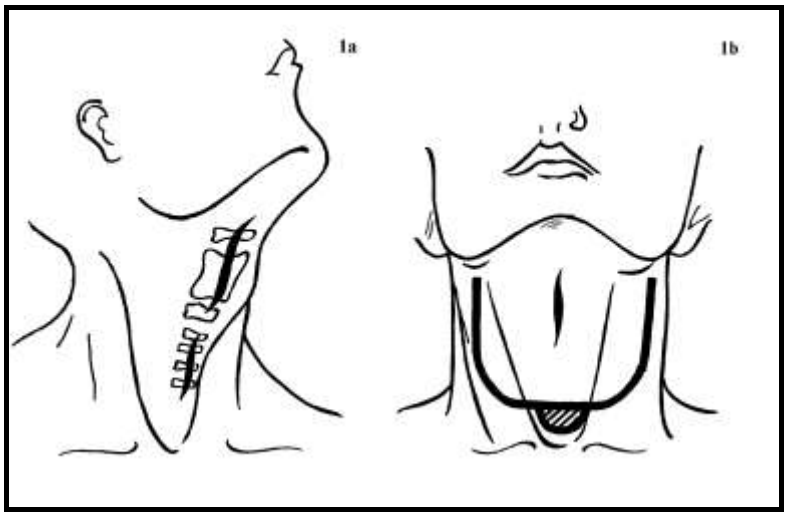

Fig. 1a. Lines of skin incisions for operations on the larynx and tracheostomy.
Fig. 1b. Line of skin incision in cases with regional metastases.

At first, a stable cannulaless tracheostoma was formed following our own method. For that purpose a part of the anterior wall of the trachea, after the upper horseshoe-shaped incision, was bent downwards and sewn into the lower angle of the wound. The edges of the orifice in the trachea were sewn on a perimeter to the skin wound edges. Wherever necessary, the adipose tissue of the neck was dissected radically or by the Cryle` method.

Resection of the larynx was started with mobilization of its part to be removed. To this end, as well as for gaining free access to that part, the hyoid bone was dissected along the midline, the thyrohyoid membrane and the soft tissues together with the periosteum being separated from the inside of each half of the bone. A wine-glass dissection of the thyroid cartilage was then made. The soft tissues above the vocal folds together with the inner perichondrium were separated rearward from the thyroid cartilage plates (Fig. 2a), with a subsequent nonpenetrating incision of tissues between the thyroid and cricoid cartilages. The lower edge of the middle part of thyroid cartilage to be excised was raised and the soft tissues were separated from it upwards to the level above the vocal folds, opening the larynx above the latter. Using an ear forceps placed in the orifice the lower part of the vestibule and the middle of the larynx were examined. In the event of intact vocal folds the removal of the affected part of the organ was continued up-and rearwards. This made it possible, as the part of the larynx was cut off and drawn out, to gradually extend the laryngopharingostoma, each time enabling further bilateral controlled surgical intervention. In such a manner it was possible to observe fairly well the arytenoid cartilages, the lateral walls of the pharynx, the aryteno- and pharyngoepiglottidean folds, the upper parts of the pyriform sinuses, the valleculae and the base of the tongue and to remove the affected tissue conglomerate from within sound tissues under visual control (Fig. 2b).

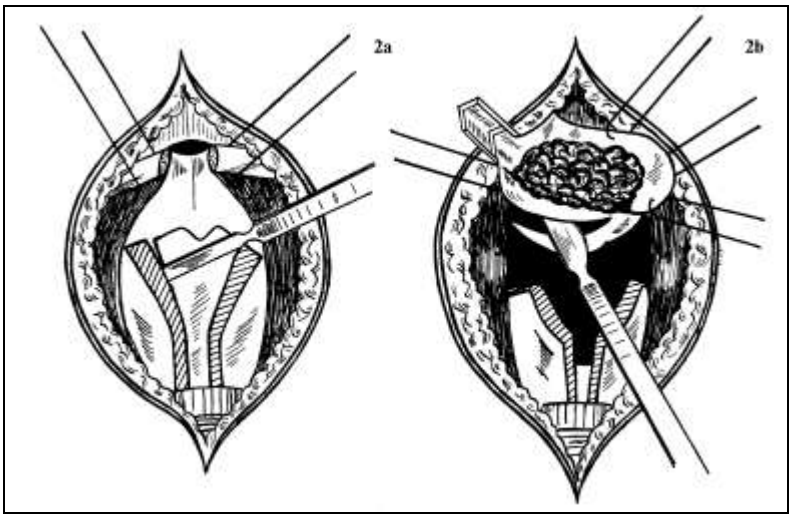

Fig. 2a. Wine-glass dissection of the thyroid cartilage and separation of the internal perichondrium.

Fig. 2b. Excision of the affected epiglottis and a part of the base of the tongue.

Wherever tumour infiltrate, disseminating along the aryteno-epiglottidean fold, reached the upper anterior part of the arytenoid cartilage, its upper part was dissected without opening the arytenoidocricoid joint. Following the amputation, the mobility of the arytenoid cartilage, limited prior to the operation by tumour infiltrate, was restored. It was possible then to make certain that the joint was intact. Besides, the functional validity of the remaining part of the larynx was raised. The operation was concluded with thorough hemostasis, drawing the thyroid cartilage plates with two chromium plated sutures on each side to the hyoid bone and suturing the intralaryngeal and pharyngeal wounds. With a view to reducing the size of the latter, use was made of the mobilized mucous membrane of the pharynx and the pyriform sinus and, occasionally, the base of the tongue. Then, using catgut, the two halves of the hyoid bone were brought close together to form a perfect contact and tied, the operative wound being sutured in layers.

RESULTS AND DISCUSSION

The results of histotopographic studies suggested a conclusion that extensive horizontal resection of the larynx is practicable in case of: (1) primary cancer of a free part of the epiglottis T4, with tumour infiltrate occupying the whole of the epiglottis, invading the anterior regions of the arytenoepiglottidean folds, the pharyngoepiglottidean folds and the lateral wall of the pharynx; (2) cancer of the upper and middle third of the fixed part of the epiglottis, when all of its laryngeal surface may be affected, the process involving the region of vestibular folds junction, anterior regions of the arytenoepiglottidean folds, tongue valleculae and the base of the tongue. The histotopographic characteristics of an epiglottic tumour which restrict the possibility of an extensive horizontal resection should be augmented to include advanced age and poor health of the patient. This is something to be remembered as the extent of that particular surgical intervention implies grave postoperative condition and a marked predisposition to local and systemic complications.

As for the tactics of extensive horizontal resection of the larynx, it is to be noted that, the downward resection of the affected part of the organ being adopted as the basis of the operation, that version of an organ preserving intervention, even with a slight involvement of the valleculae and the base of the tongue in the process, should be either rejected or carried out "at risk".

In this connection one of the principal advantages of the upward extensive horizontal resection of the larynx becomes quite apparent. It was precisely this concept that enabled us

not only to attain visual control over the operation, securing its efficiency, but also to spare some anatomical structures of the larynx. This in itself, along with the closest possible drawing of the thyroid cartilage to the hyoid bone and its wine-glass dissection (narrowing but little the lumen of the remaining part of the organ), as well as the postoperative rehabilitation measures devised by us /10/, aided in relieving the patients' condition and in restoring fairly early the laryngeal functions.

In the postoperative period, 15 of the patients demonstrated healing by first intention, and 10 had laryngopharyngeal fistulas with 3 showing partial suppuration of the wound.

Later on the laryngopharyngeal fistulas closed on their own. This relatively easy healing of postoperative wounds was due not only to adequate postoperative medication but also to stable cannulaless tracheostomas. The latter prevented high intralaryngeal pressure while coughing or swallowing and aided in reducing reflexogenic zone irritation, as well as in keeping food and liquids from entering the respiratory tract. As a result, the patients that had undergone the operation, had rare paroxysms of coughing and could dispense with the tracheotomy and nasoesophageal tubes. These combined effects provided for a relative rest to the operated organ. 3 patients that underwent a course of radiation therapy had, as a result of extensive suppuration of the operative wound, laryngopharyngostomas which 1 to 1. 5 months later were closed up with local tissues. Among systemic postoperative complications there were two cases of aspiration pneumonia.

Taking into consideration the fact that in cases when the larynx is preserved, the presence of a feeding tube causes much hardship to the patients, in the course of 3 to 4 days the latter were fed parenterally, and on the 4th or 5th day after the operation buccal feeding was allowed in the genucubital position, using a special table /10/. In addition to preventing food and liquid from getting below the stable cannulaless tracheostoma, such feeding arrangements provided for an early exercise aimed at restoring the dividing function of the larynx. In the postoperative period the patients Underwent intensive antibacterial antiinflammatory treatment, heparin therapy. In most of the patients, as much as 60 to 70% of food found its way into the larynx, on the first days of feeding and only 5 to *7%* at the time of discharge from hospital. At the checkup 1 month later, 7 patients complained of choking when taking thin or thick food: the sequence of extensive tongue base resections. In the other patients, deglutition was fully restored.

Bumming up direct postoperative complications in our patients, it appears that they were noted in 28. 5% of cases, the literature values being as high as 40%, including incidence of pneumonia in 10 to 20% of cases /4, 8, 7, 2, 6, 3, 13, 18/.

5 patients with local cancer recurrence underwent laryngoectomy, with subtotal resection of the pharynx in 3 of the cases. Due to the appearance of regional metastases, 9 patients, after different periods of time, underwent cervical lymphodissection.

In 2 patients with regional relapses, tumour excision was performed twice: Cryle`s operation with parotidectomy in one case while in the other a part of the internal carotid artery was resected together with the tumour, followed by the suturing of the vessel.

At present 13 patients (46. 4 %) are alive, the follow-up periods ranging from 4 to 12 years. Within 1. 5-3. 0 years after the operation 2 patients died of myocardial infraction and pneumonia. The fate of 3 patients is unknown to us. The other deaths were caused by the progressive principal disease: lung metaatases in 2 and incurable regional metastases in 8 cases, the repeated appeal for help coming too late. 2 of the 13 surviving patients breathe using a combination of the natural tracts (laboured respiration) and a cannulaless tracheostoma. After postoperative lymphostasis, was over (and it may be fairly marked for 15 to 30 days, in the region of arytenoid cartilages in particular), breathing was restored in the other 11 patients and was adequate not only at rest but also with moderate or even considerable exercise. Therefore,

the stable cannulaless tracheostoma was sutured in those patients. The vocal function was restored in every patient.

In summary, a modified version of extensive horizontal resection of the larynx enables ablastic resection, under visual control, of locally disseminated cancer of the epiglottis, including cases of limited involvement of the laryngopharynx and the base of the tongue. The methodological principles of the surgical intervention and the postoperative care ensure a relatively low incidence of severe complications and a comparatively early restoration of the respiratory and dividing functions. All this justifies recommending the procedure and the postoperative care features for use in practical laryngology.

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ON DIFFERENTIAL DIAGNOSIS OF DESTRUCTIVE MAXILLARY MASS LESIONS

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Computed tomography (CT) and magnetic resonance tomography (MRT) make it possible to discover a mass lesion and classify the shadow revealed (1, 2, 3 et al), though the high sensitivity and specificity of the methods sometimes give no way of determining the character of the neoplasm (4, 5, 6 et al). In the meantime, as regards elimination of such lesions preoperative diagnosis is of great importance. In this connection and for obtaining further information enabling in the pre-verification period elucidation of differential diagnostic differences between various destructive maxillary lesions (malignant or benign neoplasms, retention or parasitic cysts, osteomyelitis) we considered it expedient not only to analyze thoroughly the CT shadows but also to correlate the findings with those of clinical examination and instrumentation. As a result of the work done we succeeded in establishing that such analysis and correlation in the pre-verification period make possible differentiation of the conditions in question with sufficient reliability. This, in turn, may facilitate to some extent solving problems of diagnosis when some difficulty is involved in obtaining a biopsy specimen. We believe that this enhances the validity of CT results and the findings of clinical examination and instrumentation, permitting to plan more thoroughly the treatment of patients. 86 individuals with destructive lesions of the maxilla and the rhinopharynx were examined using a Tomoscan VX-S computer tomograph of the Philips Co. (Japan) and a Gering Sinuscana 101 L/0 Oriola diaphanoscope (Finland). 64 of the patients had malignant neoplasms (group 1), 4 had destructive maxillary cysts (group 2) and 18 had juvenile angiofibromas (group 3).

As regards patients with malignant maxillary neoplasms, there were 33 cases of the nonkeratinizing and 7 of the keratinizing types of squamous cell carcinoma, 7 of transitional cell carcinoma, 5 of poorly differentiated carcinoma, 4 of columnar cell carcinoma and 2 of glandular carcinoma. Sarcoma was diagnosed in 2 patients, rhabdomyo-sarcoma in 1 and esthesioneuroblastoma in 3 cases. 11 patients of that group had metastases to regional lymph nodes. In group 2 patients there were two cases of retention and two cases of echinococcus cysts. According to E. N. Manuilov and I. T. Batyunin's classification (1971), 3 patients of group 3 were diagnosed to have angiofibromas of the basal variety, 8 of the sphenoethmoidal and 6 of pterygomaxillary kinds. In one case the character of the tumour could not be determined due to the wide extension of the process.

Surgical intervention was performed on 32 patients of group 1, all of them undergoing maxillary resection with cervical fat dissection in 15 cases and eye socket exenteration in 15 other patients. All patients of group 2 underwent extensive maxillary sinusotomy with cyst removal. The method for echinococcus cyst removal was designed so as to prevent parasitogenic dissemination. The tumour in group 3 patients was removed via the natural routes in 4 cases, after lateral rhinotomy in 11, and following the Lowers-Balon approach in 2.

Correlation of data resulting from analysis of CT evidence with those obtained from diaphanoscopy and ultrasound investigation enabled compilation of a differential diagnosis chart. It follows from the findings presented in the chart that there are certain differential di-

agnosis differences between a malignant tumour and a destructive maxillary cyst. The former is characterized by a CT shadow of marked intensity (50-90 hv), non-homogeneous, distinguished by a large variety of shapes and dimensions. It features lighter spots differing in size of indetermined and fanciful shapes. The shadow superimposed on maxilliary formations extends beyond the maxilla. The shadow boundaries have indistinct, indefinite contours. There are signs of destruction 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. The CT syndrome peculiar to destructive cysts includes a homogeneous low-intensity (30-40 hv) or medium-intensity (40-70 hv) shadow. The CT shadow has clearly defined boundaries. Round its periphery delimiting the «rim» there are signs indicating pressure of the growing cysts. They manifest themselves in diversion of bone formations with contours gradually thinning until the development of defects. The CT syndrome characteristic for JAF includes a finely spotted shadow of moderate (50-60 hv) intensity. It is superimposed on the rhinopharynx and further, depending on the variety of the tumour, on other regions of the facial skeleton. The tumour has well defined CT boundaries. Round its periphery there are signs characteristic of pressure osteoporosis with displacement of bone structures. The bone fragments to be occasionally found within the tumour have clear boundaries and are distinguished by a uniform density of the shadow. Likewise dissimilar were both sinus translucency patterns in diaphanoscopy and the character of ultrasonic wave (uw) reflection. In the event of a malignant maxillary tumour and sphenoethmoidal or pterygomaxillary varieties of JAF there is no translucency, whereas in cases of a basal JAF variety and an echinococcus cyst the translucency on both sides is of equal intensity, and with a retention cyst it is even more intensive on the affected side than on the sound one. In cases of a malignant maxillary tumour, sphenoethmoidal or pterygomaxillary varieties the uw reflection is multiple from the conglomeration of tissues, whereas in the event of a basal JAF kind and destructive cysts the reflection recorded is from the anterior and posterior walls of the cyst or sinus.

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 (echinococcus 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 preverification period. With this in mind, it appears that correlation of CT, USI and diaphanoscopy evidence may provide important guidance.

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

Distinguishing feature signs	Malignant maxillary tumour	Cyst		Juvenile angiofibroma	
		Retention variety	Echinococcus variety	Basal variety	Sphenoethmoidal and pterygomaxillary varieties
CT shadows	Non-homogenoeus 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 multi-chamber 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 tumour 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	Luminescence of equal intensity on both sides	No or lower luminescence intensity on the affected side
USI evidence	Multiple reflections of ultrasonic waves from tumour conglomeration	Ultrasonic wave reflection from anterior and posterior cyst walls	Ultrasonic wave reflection from anterior and posterior cyst walls and intermediary reflections from daughter cyst capsules (multi-chamber structure)	Ultrasonic wave reflection from anterior and posterior maxillary sinus walls with a secondary suppurative process	Multiple reflections of ultrasonic waves from tumour conglomeration

THE USE OF HYDROGEL POLYMER SORBENTS FOR NASAL TAMPONADE

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SUMMARY

The proposed method for anterior nasal tamponade is based on the use of a radically new sorbing material - a domestically produced adsorbent - hydrophilic polymer of vinyl ethylene glycol ether (PVEGE) developed by the department of high molecular compounds of the chemical faculty of the Al-Farabi University of Kazakhstan. It rests on the use of the PVEGE sorbent placed inside a semipermeable vinyl chloride envelope of a hemispherical shape copying the nasal cavity contour.

The fundamental feature of the proposed tampon lies in the sorption of the pathological contents of the nasal cavity and in PVEGE swelling, which results in compressing further the bleeding vessels and supporting the repositioned fragments of the nasal vault bones or septum.

Preliminary experimental investigations have shown that the kinetics of swelling is most clearly defined in the case of water, native plasma and saline solutions, being almost two thirds lower for the whole blood.

The advantage of the proposed tampon manifests itself in prompt epistaxis and sorption of pathological contents.

The development of new materials and means usable for the purposes of nasal tamponade is a topical problem in clinical otorhinolaryngology.

This is mainly due to the frequent use of the manipulation widely accepted both in urgent service (the management of epistaxis, repositioning of nasal bones, etc.) and in scheduled rhinosurgery, since practically every surgical intervention in the nasal cavity ends in more or less extensive application of anterior tamponade.

According to our clinic's set of data, anterior tamponade is employed on the average in 34,0 to 47,8 percent of cases requiring emergency treatment for epistaxis of various etiology, repositioning of nasal bones or the opening of nasal septum hematomas and abscesses, etc. Nasal tamponads account for as much as 19 percent of all the manipulations performed at the casualty ward in emergency cases. Anterior nasal tamponade is thus one of the most common otorhinolaryngological procedures.

The permanent interest displayed by the profession in the search for new materials and ways of using nasal tamponades stems from the inadequacy of the conventional gauze tamponade in the form of turundae. Namely, the marked painfulness of the procedure and the considerable time it takes to perform it with several gauze strip turundae, quickly soaked with nasal mucus and the subsequent lack of aeration. The last-named circumstance results in a marked congestion, accumulation of nasal secretions, resorption of the products of decomposition of lysed blood clots and secondary inflammation factors. Such conditions tend to produce a medium favourable for activation and reproduction of bacterial flora, and heighten the inflammation reaction, whereas the resorption of the whole of the pathological contents results in pronounced intoxication.

Moreover, a gauze tampon even with the turundae imprignated with various drugs, such as antibiotics, aseptic solutions, hemostatic fillers, etc. (Beninghouse, B.I. Dunaivitzer, 1987), prevents almost completely the functioning of the ciliated epithelium of the nasal cavity, depressing drastically the secretory function and increasing many-fold the load on the mucus-epithelium barrier under extremely unfavourable conditions. All this adds up not only to detract from but in some respects to

prevent completely the normal physiological functioning of the mucous membranes of the nasal and appendicular cavities.

The above-mentioned shortcomings necessitate a frequent change of tampons which, in turn, adds to mechanical injury and conduces to secondary hemorrhage both because of the gauze strips "sticking" to the epithelium or wound surface and as a result of traumatic removal of thrombi.

Confronted with the problem, the otolaryngologists are devising various ways of solving it, including the use of rubber obturaters (M. P. Mezrin, 1949), with later modifications after V. P. Grigoriev (1966) etc. Extensively used in other countries is Masing's pneumatic nasal tampon manufactured by the Rusch Co., V. V. Petretsky and A. E. Popovich (1987) having proposed its unique modification. Along with different versions of pneumatic tamponade, use has also been proposed of other materials, including parolon (I. G. Khodakov, 1975; A. I. Nesterov, 1971) various kinds of hemostatic sponges (A. I. Vlasiuk, 1970), cotton-wool swabs or gauze strips soaked with different hemostatic preparations (A. T. Kostyshin, 1976; B. I. Dunaivitser, 1987; V. A. Nasyrov, 1987).

However, none of the numerous schemes has been put into effect on a large scale, and gauze packs impregnated with various oils or ointments are still universally accepted.

Our anterior tamponade method is based on the use of a principally new domestic adsorbent - hydrophilic polymer of vinyl ethylene glycol ether (PVEGE) developed at the department of high-molecular compounds of the Al-Farabi University of Kazakhstan (Z. S. Nourkeeva). The polymer has undergone both laboratory, experimental and clinical tests (Zh. B. Meermanova, 1987; I. K. Nam, 1998). Absolute harmlessness of PVEGE to the human body has been proved, with tests being conducted for its toxic properties, pyrogen response and effect on the surrounding tissues, including those of laboratory animals after long implantation periods. No pathological manifestations have been observed in any of the experiments. PVEGE has found application in surgery and ophthalmology as a sorbent in cases of varied pus-forming processes, with good results obtained in the management of purulent wounds (V. B. Skopintsev, 1992). Laboratory, experimental and clinical studies have been carried out of the absorbing and adsorbing properties of PVEGE, i. e. the conditions of rediffusion of certain drugs and of sorption of inflammation products (Zh. B. Meermanova, 1998), of liquids, including compound colloidal solutions with suspended large and small dispersed particles, such as the biological liquids of blood and plasma (G. S. Sagatova, 1998).

The proposed method for nasal tamponade is based on the use of the PVEGE sorbent inside a semipermeable envelope in the shape of a hemisphere copying the nasal cavity contour (Fig. 1).

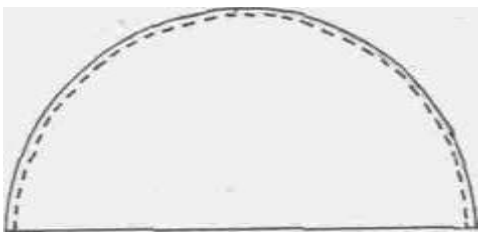

Fig.1. Proposed PVEGE tampon; the base - 5 cm, the height - 2.5 cm, R - 2.3 cm.

The upper edges of the vinyl chloride film are connected together by glueing or fusing, the latter technique is, in our opinion, preferable because of the thinness and strength of the joint. To begin with, the contour of the vinyl chloride film is cut strictly along the circumference, which is technically quite convenient. The properties of the proposed tampon envelope are such that, while being permeable to various solutions, including the pathological contents of the nose (mucus, blood, products of inflammation and of blood clot lysing, bacteria, etc.), it confines them within, the sorbent being filled by swelling. In the event of excessive contents, the envelope keeps them from oozing out.

As noted above, the material used as the tampon filler is the PVEGE sorbent in the form of 0. 2 cm3 to 0.4 cm3 shavings or granules with a total weight of 1. 5 gr. It does not fill up completely the tampon volume. Thus, depending on the specific features of the anatomic structure and size of the vestibule of the nose, the tampon can be shaped to any required form by twisting or bending in two; it can be inserted into the nasal cavity as a folded piece, etc.

Nasal tamponade is carried out in the regular way, i. e. the vestibule of the nose is widened with a nasal speculum and the tampon is inserted with a bayonet forceps as far as the posterior region. In the event of some obstruction (the narrowness of the nasal introitus, curvature or spine) the solid and yet elastic tampon may be pushed in as required. Wherever necessary, the tampon may be straightened out and raised until the superior nasal passage or vault.

As a result of sorption, PVEGE takes up rather quickly the liquid contents of the nasal cavity together with the remains of lysed blood clots with some formed elements, inflammation products, remnants of desquamated epithelium, bacteria, etc., suspended in the nasal secretion solution. The sorbent swells, filling up the tampon space and using up completely the volume of the envelope which, in turn, squeezes further the bleeding vessels or supports the repositioned broken bone fragments of the nasal vault or septum. The volume of swelling will be limited by the size of the tampon envelope. Possessing the property of adsorption, the proposed tampon, in the process of sucking the nasal cavity contents, increases in volume due to the swelling of the PVEGE inside it. Nevertheless, as a rule, it can be removed without any difficulty, principally due to the smooth and uniform surface of the vinyl chloride envelope. As distinct from gauze turundae and cotton-wool swabs, it does not adhere to the nasal cavity walls nor does it injure the mucous membranes. The envelope can be removed with forceps in one movement, sliding easily along the nasal cavity walls. Taking into account the design, shape, and parameters of the proposed tampon, the type and structure of the filler (adsorbing PVEGE in granules) and envelope (semipermeable vinyl chloride film), it was given the name adsorbing polymer for nasal tamponade or APFNT.

With a view to exploring the adsorption properties of the proposed tampon, a series of experimental studies were carried out using PVEGE shavings in the volume of an APFNT filler, i.e. 1.5 gr, as well as the finished tampon itself. Then the kinetics of swelling was investigated, using different liquid media: 1 - distilled water, 2 - normal saline solution, 3 - native fresh frozen plasma, 4 - heparinized whole blood. The gain in mass in the course of adsorption was measured at intervals ranging from several minutes to three or more days. Swelling kinetics was estimated by the indices of the equiponderant swelling degree which, in turn, was computed from the formula:

$$\frac{\text{swollen M - dry M}}{\text{dry M}}$$

The results of experimental studies have shown that there is practically no difference in the adsorption properties of PVEGE in the pure form and the APFNT tampon, i. e. the sorbent in a semipermeable vinyl chloride envelope. Thus, the swelling kinetics of both objects under investigation followed the same lines which testifies to the absolute permeability of the tampon envelope both to water or plain salt solutions and to complex colloidal suspensions such as plasma and blood (Fig. 2 and Table 1).

In estimating the swelling kinetics, it was found that within the first 10 to 12 minutes the equiponderant degree of hydrogel swelling for water and saline increased almost by the size of the initial volume, while that for water only by one third. Within the first? 0 minutes the mass of the sorbent was almost 1. 5 times greater while in the case of blood the increase amounted to only one half of the initial value. Thereafter, as can be seen from the graph and the table, the rates of increase of the mass of PVEGE and of APFNT for the first three solutions are almost similar, although consistently somewhat lower in the case of plasma. As regards whole heparinized blood, its increase index of 6. 8 was noted only at the end of the third day, when the increases in the case of the other solutions

were as high as 14 to 18 times the initial weight. After 72 hours the equiponderant swelling stops, i. e. the kinetics of the increase in the sorbent mass is completed.

Table 1. Indices of PVEGE swelling kinetics

Liquid / Time	H_20	NaCl (0.9%)	Plasma	Blood
12 minutes	0.96	1.1°	—	0.50
50 minutes	1.67	-1.36	1.33	0.46
2 hours	5.93	5.61	5.49	0.93
3.3 hours	5.88	3.43	3.25	1.48
6 hours	7.95	6.91	6.63	1.92
24 hours	14.48	12.72	11.96	5.53
4-8 hours	17.14	13.24	15.39	4.39
72 hours	17.92	16.22	14. 25	6.80
				10.04

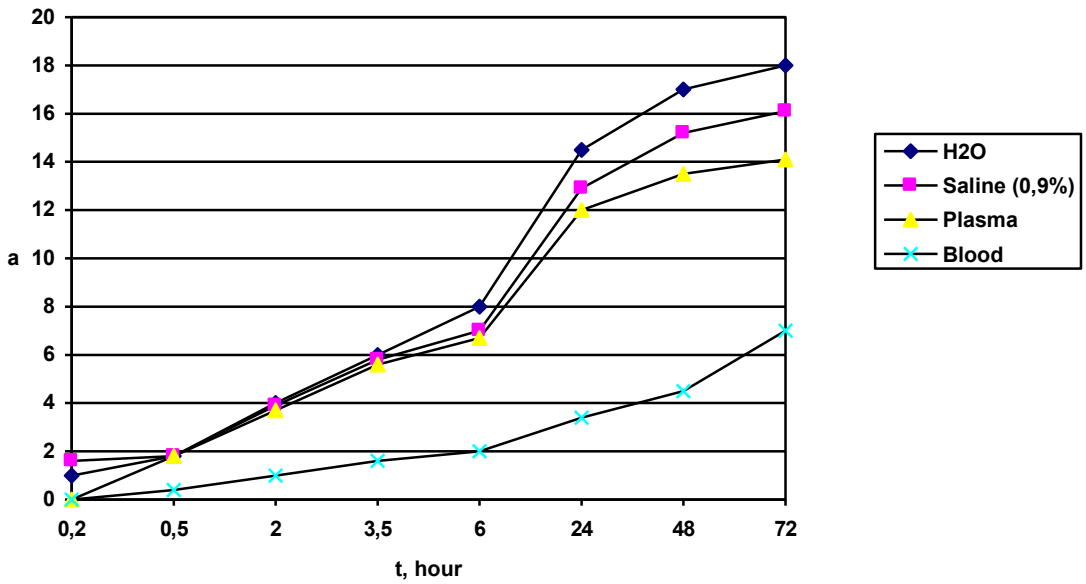

Fig.2. Comparative analysis of PVEGE swelling in liquid media

Thus, experimental investigations have shown that the sorbing properties of PVEGE are most clearly defined for water, somewhat less so for salt solutions and native plasma, and almost two thirds lower for whole blood. The latter is apparently due to the high viscosity of blood which is accounted for by large dispersed particles - formed elements. As for fairly large protein structures of plasma, PVEGE manifests its adsorbing properties in about the same way as in the case of plain salt solutions and water. The pores of the vinyl chloride film alow active passage of both the suspended protein structures of plasma and the formed elements of blood, as evidenced by the same swelling kinetics for pure PVEGE and the adsorbent placed inside a semipermeable envelope, i. e. APFNT.

In cases of epistaxis, due to nasal tamponade, bleeding is to stop merely through mechanical compression of the vessels. Otherwise a tamponade is regarded as a failure, that is to say, with obturation of the nasal cavity, blood is not to enter it provided the tamponade is adequately carried out. Thus, the principal contents of nasal passages are secretions, remnants of lysed blood clots with elements of desquamated epithelium, fragments of bacterial flora and secondary inflammation products, i. e. protein structures which, as revealed by experiments in the case of native plasma, are adequately adsorbed by PVEGE.

The scope of this paper precludes citing some clinical results of using APFNT. Relevant material will be presented in subsequent publications.

CONCLUSIONS.

1. The adsorbing hydrophilic polymer - polyvinyl ethylene glycol ether - PVEGE - is a radically new material feasible for nasal tamponade.
2. The adsorbing properties of PVEGE are not affected when it is placed inside a semipermeable vinyl chloride film envelope, the proposed APFNT tampon retaining all the properties of the sorbent.
3. The equiponderant degree of PVEGE and APFNT swelling is most clearly defined for water, plain salt solutions and plasma, and less so for whole heparinized blood. The swelling kinetics manifests itself dynamically within 72 hours. Under experimental conditions the sorbent mass increases by the factor of 17. 92 at most.

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ЗНАЧИМОСТЬ МОРФОЛОГИЧЕСКОГО ИССЛЕДОВАНИЯ В ДИАГНОСТИКЕ РАКА ГОРТАНИ

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РЕЗЮМЕ

У 287 больных раком гортани изучены различные методические подходы получения материала на морфологическое исследование.

Наиболее часто отрицательные результаты получены при взятии материала эндоларингеальным доступом, особенно при эндофитном росте опухоли.

С целью получения материала для морфологической верификации опухоли целесообразно использовать не только эндоларингеальное выкусывание, но и извлечение материала через фиброэндоскоп, а также пункции гортани через вырезку щитовидного хряща гортани и метастатических лимфатических узлов шеи.

В гортани, по сравнению с другими отделами верхних дыхательных путей, довольно часто встречаются процессы незлокачественного характера, субъективная симптоматика при которых практически мало отличается от признаков раннего рака гортани.

Положение усугубляется еще и тем обстоятельством, что рак гортани может развиваться на фоне предраковых заболеваний, таких как дискератозы, папилломы, пахидермий и т.д. Дифференциальная диагностика их затрудняется еще и тем обстоятельством, что обычно и предраковые процессы и рак гортани наблюдаются у мужчин старше 40 лет (В.О.Ольшанский, 1988; Ф.И.Чумаков с соавт., 1981; Т.А.Машкова, С.Л. Ярлыкова, 1986 и т.д.).

Клиническая дифференциация этих процессов затруднена, так как при папилломах и дискератозах гортани могут наблюдаться так же, как и при раке, различные формы роста.

Из наблюдавшихся нами 78 больных с процессами незлокачественного характера в гортани без морфологической верификации, только на основании клинических и рентгенологических данных, был снят диагноз злокачественной опухоли в следующих случаях: липома, лимфангиома, гемангиома, воздушная киста гортани, склерома, сифилис и парез гортани. В остальных случаях диагноз был верифицирован гистологически на биопсийном или операционном материале: амилоидная опухоль, смешанная опухоль, хондрома, фиброма, интубационная гранулема, туберкулез и микоз. Особого внимания среди всех этих процессов безусловно заслуживает папиллома гортани, как наиболее часто встречающаяся и наиболее часто малигнизирующаяся патология, клиническое течение которой зачастую носит экспансивный характер.

У 34 больных раком гортани, при взятии биопсии по месту жительства, был поставлен гистологический диагноз "папиллома без малигнизации", на основании которого эти пациенты отправлялись под наблюдение, а в последующем поступали с распространенными процессами в наше отделение.

С нашей точки зрения, в указанных случаях судили только по верхушке "айсберга", тогда как у основания папилломы уже шел процесс малигнизации.

В связи с указанным мы считаем, что папилломы гортани во всех случаях нужно расценивать как облигатный предрак и подвергать радикальному хирургическому лечению.

Взятие материала из гортани довольно сложная процедура в связи с особенностями структуры шеи, языка, гортани, высоким глоточным рефлексом, что ведет к необходимости повторных биопсий.

Наиболее часто используемый до настоящего времени в практической оториноларингологии метод - изъятие материала из гортани гортанными щипцами под непрямой (зеркальной) ларингоскопией. Однако, результат гистологического исследования в связи с неудачным забором материала и особенностями роста опухоли в гортани нередко бывают отрицательными.

По данным различных авторов, при инфильтративной форме рака гортани, локализации опухоли в гортанных желудочках, подскладочном пространстве, гортанной поверхности надгортанника, число положительных результатов резко снижается.

Таблица 1.Результаты эндоларингеальной биопсии в зависимости от формы роста опухоли гортани

Форма роста	Кол-во больных	%	РЕЗУЛЬТАТЫ					
			+		±		-	
			число	%	число	%	число	%
Экзофитная	78	27,18	53	67,95	15	19,23	10	12,82
Эндофитная	124	43,20	39	31,45	34	27,42	51	41,13
Смешанная	85	29,62	37	43,53	27	31,76	21	24,71
Всего:	287	100,0	129	44,95	76	26,48	82	28,57

Из 287 больных раком гортани, у которых материал для морфологической верификации опухоли был получен путем эндоларингеального выкусывания, отрицательный результат имел место в 28,57% случаев.

При эндофитной форме роста опухоли удельный вес отрицательных результатов эндоларингеальной биопсии (в совокупности гистологического и цитологического методов) составил 41,13%. При смешанной форме роста - 24,71%. Наиболее удачными являются результаты эндоларингеальной биопсии при экзофитной форме роста (отрицательный ответ был получен в 12,82% случаев).

Видимо указанными моментами и объясняется тот факт, что на местах (в областях) врачи, получая отрицательный ответ в плане злокачественности процесса, результат гистологического исследования, успокаивают больных и отправляют их под длительное наблюдение. Между тем, согласно наших наблюдений, неверные результаты гистологического и цитологического исследования являются следствием неудачно выбранного пути для прицельного получения материала из патологического очага.

В связи с функциональной значимостью гортани как органа и многообразием различных патологических процессов этой локализации (доброкачественного, предракового, воспалительного характера), имитирующих клинически злокачественную опухоль, морфологическая верификация сущности процесса представляется весьма важным.

Безусловно, основной являлась методика эндоларингеального выкусывания опухоли, в случаях невозможности взятия материала или при отрицательных его результатах, нами использовались следующие альтернативные пути:

1. Через фиброэндоскоп (мазки и биопсия);
2. Чрезкожная пункция гортани в области вырезки щитовидного хряща;
3. Пункция метастатических узлов шеи.

В ряде случаев, при трудностях эндоларингеального выкусывания и выраженности метастазов в регионарные лимфатические узлы, проводилось исследование пунктата из них.

И, наконец, при эндофитном росте опухоли и врастании в преднадгортанниковое пространство проводилось пункционное изъятие материала через щитовидную вырезку.

Таблица 2. Результаты различных методов получения морфологического материала при раке гортани

Методологические подходы	Кол-во больных	Р Е З У Л Ь Т А Т Ы					
		положительные		сомнительные		отрицательные	
		число	%	число	%	число	%
Эндоларинг. биопсия	287	129	44,95	76	26,48	82	28,57
Фиброэндоск. извлечение	77	68	88,31	5	6,49	4	5,19
Чрезщитовидная пункция	18	12	66,66	3	16,67	3	16,67
Пункция л/у шеи	45	33	73,33	7	15,56	5	11,11

Как следует из таблицы, наиболее часто отрицательные результаты были получены при взятии материала путем эндоларингеального выкусывания (28,57%). Второе место по частоте отрицательных результатов занимает чрезщитовидная пункция (16,7%). Отрицательные результаты при пункции метастатических узлов и фиброэндоскопическом получении материала составили 11,11% и 5,19%.

У 18 больных злокачественность процесса была подтверждена субоперационно (ларингофиссура и экспресс-биопсия), а у 9 - материал был получен путем ретроградной фиброэндоскопии через ранее наложенную трахеостому. Особенно сложно было получить материал для морфологической верификации опухоли у больных раком гортани, осложненных хондроперихондритом.

В тех случаях, когда гистологические и цитологические данные вызывали «подозрение на злокачественность процесса» в сопоставлении с клиническими данными, выносился вердикт о злокачественности процесса.

ВЫВОДЫ

1. Принципиально важно изучение морфологической структуры патологического процесса гортани, т.к. клиническая картина в ранних стадиях рака гортани и облигатных предраках бывает во многом сходна.

2. С целью получения материала для морфологического подтверждения (гистологического и цитологического) целесообразно использовать не только традиционно используемое эндоларингеальное выкусывание, но и фиброэндоскопический метод, а также пункции через вырезку щитовидного хряща и метастазов в лимфатические узлы шеи.

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РАЗРЕШАЮЩИЕ ВОЗМОЖНОСТИ ЛУЧЕВЫХ МЕТОДОВ ИССЛЕДОВАНИЯ В ДИАГНОСТИКЕ РАКА ГОРТАНИ

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РЕЗЮМЕ

Проанализированы разрешающие возможности лучевых методов исследований у 139 больных раком гортани (рентгенотомография), в том числе у 27 - показатели компьютерной томографии.

Установлено, что рентгенотомография гортани в качестве метода "ранней" диагностики имеет ограниченное значение. Томография гортани ценна для выявления ограниченных опухолей гортанного желудочка или подскладочного пространства, а также для определения границы распространения опухоли в проксимальном и дистальном направлениях.

Компьютерная томография позволяет уточнить инвазию рака гортани в окружающие его анатомические структуры.

Рентгенологический метод занимает существенное место в обследовании больных при постановке диагноза "рак гортани" и является органической частью клинического исследования этой группы больных.

Наиболее широко применяются в клинической практике боковая рентгенография и прямая томография гортани (Г. М. Земцов, 1960; А. И. Позмогов, 1961; А. И. Пачес, В. О. Ольшанский, 1987; Е. С. Огольцова, Е. Г. Матягин, 1989).

В последние годы в связи с оснащением некоторых лечебно-диагностических центров аппаратурой для компьютерной и магнитно-резонансной томографии, более широко стали использоваться возможности новой техники (Г. М. Нуммаев с соавт., 1992; В. О. Ольшанский, 1988).

Нами, в целях определения разрешающей возможности обычного рентгенотомографического исследования, при выявлении патологии гортани, проанализировано 112 боковых рентгенограмм и прямых томограмм гортани, в том числе у 21 - при пробе Вальсальвы.

Тщательный анализ рентгеноанатомии гортани 15 больных раком гортани показал следующее.

Таблица 1. Рентгеноанатомические ориентиры гортани и их визуализация при обычном рентгенотомографическом исследовании

Элементы гортани	КОНТУРИРУЮТСЯ	
	На боковой рентгенограмме	На прямых томограммах
Язычно-гортанные валлекулы	+	-
Надгортанник:		
Свободная часть	+	-
Фиксированная часть	-	-
Черпало-надгортаннаяскладка	±	+

Передняя комиссура	-	-
Черпала	±	±
Вестибулярные складки	-	+
Гортанные желудочки	±	+
Голосовые складки	-	+
Подскладочное пространство	+	+
Грушевидные ямки	-	+

• хорошо очерчены+, слабо очерчены ±, не поддаются оценке -.

Из приведенной таблицы видно, что отдельные анатомические элементы гортани (язычно-гортанная валлекула, свободная часть надгортанника, подскладочное пространство) хорошо визуализируются на боковой обзорной рентгенограмме.

Четко судить о состоянии черпало-надгортанных складок, черпал и гортанного желудочка представляется проблематичным, а фиксированная часть надгортанника, передняя комиссура, вестибулярные и голосовые складки, а также грушевидные ямки не поддаются оценке.

На прямых томограммах хорошо поддаются оценке связочный аппарат гортани, гортанные желудочки, подскладочное пространство, грушевидные ямки, черпало-надгортанные складки.

Проведение прямых томограмм гортани при пробе Вальсальвы усиливает информативность, особенно в отношении грушевидных ямок и гортанных желудочков, повышая их воздухонаполняемость.

Анализ нашего материала показал, что объективными рентгенологическими критериями, на основании которых можно полагать наличие патологического процесса в гортани, могут служить следующие моменты:

- выпуклость и расширение преднадгортанникового пространства;
- расплывчатость контуров отдельных элементов гортани;
- дополнительная тень;
- увеличение объема отдельных элементов гортани, их уплотнение;
- сглаженность угла подскладочного пространства или конусообразность формы воздушного столба;
- деформация просвета гортани;
- сужение просвета грушевидных ямок;
- деструкция хрящей гортани.

Основная масса больных раком гортани, обратившихся в наш институт за консультацией и лечебной помощью, имели распространенные процессы, когда клиническая и рентгенологическая симптоматика не оставляли сомнений в характере процесса.

В указанных случаях, положительным моментом рентгенологического исследования явилось то, что разрешались вопросы дистального распространения опухоли, поскольку визуальная (зеркальная) оценка распространения на средний и подскладочный отделы была невозможной при поражениях опухолью вестибулярного отдела гортани.

Однако, в ряде случаев (17 больных), когда опухоль поражала фиксированную часть надгортанника, переднюю комиссуру и даже истинные связки, и объем опухолевого пораже-

ния соответствовал T_1, рентгенологическое исследование оказывалось недостаточно объективным не только для документального подтверждения процесса, но и для его выявления.

В этом плане наглядным представляется следующий случай:

Больной С., 56 лет, обратился к ЛОР-врачу в целях профилактического осмотра. Жалоб не предъявляет. При непрямой ларингоскопии врач определил, что на передней трети левой голосовой складки отмечается легкое утолщение края связки с шероховатой поверхностью. Остальные элементы гортани и подвижность связок не нарушены. При рентгенологическом исследовании гортани патологии не выявлено. Эндоларингеально из измененного участка взята биопсия (результат гистологического исследования -плоскоклеточный ороговевающий рак). С согласия больного произведена операция -ларингофиссура, хордэктомия. Гистологическое заключение по удаленному препарату аналогична биопсийному. Больной наблюдается в течение 6 лет без рецидива и метастазов.

Данный случай наглядно демонстрирует, что широко применяемое рентгенотомографическое исследование разрешает вопросы диагностики только лишь при достижении опухолью определенного объема. В тех случаях, когда опухоль еще мала, она может попасть между двумя срезами томограмм и, следовательно, не будет визуализироваться объективно.

Разрешающие возможности компьютерной и магнитно-резонансной томографий исследованы у 27 больных раком гортани.

Результаты исследований показали, что КТ особенно ценна для выявления инвазии рака в окружающие гортань тканевые структуры и может объективизировать элементы структурных нарушений.

У 5 больных выявлена инвазия опухоли в щитовидный хрящ и щитовидную железу при отсутствии объективных признаков вовлечения их в опухолевый процесс.

Прорастание опухоли в преднадгортанниковое пространство при отсутствии клинических признаков выявлено у 3 больных.

У 4 больных выявлены глубокие лимфатические узлы шеи диаметром 1-1, 5 см., которые не выявились при пальпаторном исследовании шейного лимфатического барьера.

С нашей точки зрения КТ и ЯМРТ должны применяться как дополнительный метод после проведения рентгенотомографического исследования гортани для решения следующих задач:

- выявления инвазии в окружающие гортань ткани;
- прорастания в преднадгортанниковое пространство;
- деструкции хрящей гортани;
- прорастания в щитовидную железу;
- распространения в грушевидные ямки;
- выявление клинически не определяемых метастаз в шейные лимфатические узлы.

Однако, в связи с горизонтальными плоскостными срезами, получаемыми при КТ,трудно ориентироваться:

– в вовлечении в процесс язычно-гортанной валлекулы;

– в структурных изменениях на уровне отдельных анатомических элементов просвета самой гортани (вестибулярных, голосовых складок, гортанных желудочков);

– четко определить верхнюю и нижнюю границы опухолевого поражения.

Таким образом, каждый из наиболее доступных для практического врача-оториноларинголога методов лучевого исследования (боковая рентгенография, обычная томография в прямой проекции, а также компьютерная томография) имеют свои разрешающие возможности и должны применяться последовательно в целях разрешения определенных задач.

Информация, получаемая при использовании лучевых методов исследования, важна в плане определения рациональной тактики лечения - объема облучаемых тканей и хирургического вмешательства при раке гортани.

Выводы:

1. Рентгенологический метод в качестве метода "ранней" диагностики имеет ограниченное применение, поскольку для лучевой визуализации процесса образование должно быть не менее 4-5 мм в диаметре.
2. Томография гортани ценна в тех случаях, когда имеется подозрение на ограниченную опухоль в гортанных желудочках или в подскладочном пространстве.
3. Основное назначение рентгенотомографии гортани - уточнение параметров распространения опухоли (его границы) в проксимальном и дистальном направлениях и документальное подтверждение наличия объемного процесса.
4. Компьютерная томография позволяет уточнить инвазию рака гортани в окружающие его анатомические структуры - преднадгортанниковое пространство, щитовидный хрящ, щитовидную железу, гортаноглотку, метастазы в регионарные узлы шеи.

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ORAL CANDIDA INVASION IN HIV-POSITIVE PATIENTS

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Oropharyngeal candidiasis is the most frequent opportunistic infection in patients infected with the human immunodeficiency virus (HIV).

The Candida albicans agent occurs as a saprophyte in 20% - 40% of the normal population; but in 48% - 90% of HIV-positive and AIDS-patients.

Of the fungal infections associated with AIDS, oral candidiasis is the most commonly occurring infection.

The clinical picture of oral candidiasis chracteristically ahows four major forms:

1. the erythematous (that is the atrophic form);
2. acute pseudomembranous candidiasis (that is thrush);

3. the hyperplastic form, and finally, the angular cheilitis form.

In HIV-positive patients, the erythematous form is not only the most common form but also the one which appears first and which may also occur simultaneously in multiple oral sites. Further, it is frequently, clinically, not readily diagnosed.

As you can see in this picture, the middle of the tongue manifests the erythematous form and simultaneously the lateral regions of the tongue manifest the pseudomembranous form.

The morphogenesis of Candida albicans is illustrated in these schematic diagrams. Here is the budding process of the blastospores. A parent blastospore produces a new cellular outgrowth from a small site near one of its poles. The new bud enlarges until mitosis occurs and a septum is laid down between parent and bud. This shows the hypha formation (also known as mycelium) in which hyphal branches and lateral budding are to be seen.

Here in this diagram, tha hyphal growth begins with germ-tube formation. Hyphal branches are formed instead of lateral buds. This is probably the stage at which Candida invasion of the oral epithelium is initiated. Although not 100% sharp, this electron micrograph shows germ tube formation. A cylindrical outgrowth is initiated from the surface of the blastospore.

Pseudohypha formation in Candida albicans also occurs. This seems to be an intermediate morphogenetic development between budding and hyphal growth. Please note the obvious constrictions at the septal junctions.

This electron micrograph shows Candida invasion of the oral epithelium in a patient with AIDS. You see here the Stratum corneum in which the Candida albicans is already intracellular.

At higher magnification, the intracellular position of the Candida albicans can be seen more clearly with various cell organelles, such as, mitochondria, ribosomes, vacuoles, lysosomes, plasma membrane with lomasomes and the 250 nm plasma membrane of the fungus. Here are the tonofilaments of the host cell.

In comparison to immune-competent persons, HIV-positive patients demonstrate less inflammatory reactions and less phagocytosis of Candida caused by granulocytes, macrophages and keratinocytes. Here you see typical invasive epithelium forms with the characteristic septum. At the outer cell wall layer at the apex of the mycelium one can recognize the electron-dense (40-60 nm) filaments which are responsible for adhesion to the epithelial cells. This adhesion is the precondition for tissue invasion, to take place. The effect of proteolytic enzymes, such as phospho-lipase, may be a factor facilitating this invasion.

This is a diagram of a Candida albicans cell wall. The above-mentioned electrondense outer fibrillar layer can be seen here. These layers may contain mannoproteins, glucan and chitin.

This electron micrograph shows an invasive pseudomycelium in transversal and in longituninal section. The typical fibrillar structures are clearly visible at the apex as well as the characteristic constriction at the septal junction. The pseudohyphae are distinguishable from a true hypha only by the conspicuous constrictions of the pseudohyphae at septal junctions.

This shows Candida invasion penetrating simultaneously three epithelial layers of the oral mucosa in an HIV-positive patient.

Here is a schematic representation of the cell biological aspects of Candida invasion of the epithelium of the oral mucosa; adhesion to the epithelial surface; penetration of the host cell with intra- and intercellular spreading, which possibly leads to the death of the host cell: subepithelial invasion through the basal lamina; and finally, invasion of the vascular compartment which may lead to Candida septicemia.

As every fourth AIDS-patient finally dies of a Candida infection, early diagnosis and lifelong antimycotic treatment are indispensable.

THE ROLE OF THE NOISE IN ARTISTIC COMMUNICATION

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Noise is a very, if not the most important factor in the following aspects:
- knowledge of the auditory characteristics of the environment
- sending non verbal messages
- sending verbal messages.

Therefore, it is a natural consequence to consider the role of noise in the artistic production, reception and communication at least for the factors – of its qualitative and quantitative presence, absence or importance, and – of its different meanings.

It is very difficult to express the rank of the different chapters so that the presentation of *Fig. 1* has not hierarchical meaning. Anyhow, the five points of view should be considered independently for the danger of misunderstanding many significances of the word «noise», even if in fact they are mixed and all (or almost all) present in a single acoustic performance.

1. THE PHYSICAL ASPECT

We propose that any acoustic fact should be labelled with the neutral term of *sonority*. In such a way we can hold separate the *sounds* or period or regular acoustic waves and the *noises* or aperiodic or irregular acoustic waves. So we could avoid the amazing situation of calling sounds the phonemes wich are in the majority and in their essence composed by noises. It must be remembered that a complex mixture of sounds (other than the harmonic and the counterpoint) can produce a noise. Among the physical parameters of noise we recall the energy, the timbre and probably also a kind of melodic movement (at least in the sense of the klangfarben melodie!).

2. THE COMMUNICATIONAL ASPECT

a) Noise as information. The acoustic noise is an essential information given by any kind of instruments (proper or manufactured for other purposes, but also able to produce sonorities; able to produce only undeterminated sonorities - as the majority of the instruments of the battery sections - or constructed for producing mainly sounds - i.e. beating a violine). An artistic information is also given by all the unvoiced phonemes and almost all the voiced consonants, both sung or spoken. Noises produced from any part and any mechanism by the vocal tract - and vocal cords- can also be employed as well as noises produced from other parts of the body, e.g. hand clapping. It should be remind that the use of noises has not only a rhythmic meaning.

b) Noise as a contrainformation. As a contrainformation noise can be also non acoustic, but of any other chemiophysical nature (e.g. visual); in addition also the sounds become noises as contrainformation. An example: the cocktail party, different musics.

c) Noise as a disturbance. The communication theory states that there are no perfect communication channels, but that any of them is transporting together signals and non signals or noises. Important, is therefore, the signal to noise ratio which cannot be under a certain signal.

d) Noise as masking. From audiology we know the masking power of certain sonorities (e.g. low pitch over high sounds; TTS or temporary treshold shift caused by loud sonorities).

3. THE HEDONISTIC-EMOTIONAL ASPECT

In the majority of cases the sonority which is judged unpleasant is labelled by the name of noise and on the contrary the sonority felt agreeable is called sounds. So the noise produced by a

working factory is music for the ears of its owner and a training violinist produces only noise for the neighborhood. It is therefore important to notice that the hedonistic judgement can be very different from the physical and measurable reality.

What is the sonority of a triangle in an orchestra? A sound, a noise? Physically it is a noise. In many cases ugliness caused by sounds (clusters, non harmonic accords, some atonal or dodecaphonic music) is produced, researched or wanted by authors and performers.

4. AUDITORY AND EXTRAAUDITORY DAMAGES OF SONORITIES

Very probably we can regard as noise any damaging sonority independently from its physical nature. Loud or very loud, long-lasting, annoying or unpleasant sonorities are able to cause damages of different kinds. We can remind the following situations:

- acute acoustic trauma (by some orchestra or band players in listeners in some closed places when 50.000 watts can be used)
- chronic acoustic trauma (hearing music for hours above 85-90 dB, specially by walkman)
- the vegetative troubles (hypertension, tachicardia, digestive troubles, sleeplessness, sexual disorders, irritability, lack of concentration, diminution of attention, etc.)
- the feelings of existencial negative meaning
- the impairment of interpersonal and social relationship.

5. VOICE AND BEING ALIVE

A noiseless environment is not well accepted (remember the feelings in a sound-proof chamfer!) and very probably noiselesness is a metaphor of the cheat or at least of the loneliness. In a period and in places like ours of big noise pollution or one side and of much incommunicability and depression on the other it is possible that an (at least partial) solution is to find a noise foe feeling alive and for monitoring continuously that one does not remain alone.

This interpretation has two points:

a) an environmental noise is needed and if not judged sufficient it is artificially implemented or amplified

b) the basically artistic sonorities (both sounds and noises from physical point of view) are easily transformed in the vital noise (the permanent music of any kind reproducers - stereo, radio, TV, etc.).

This short and schematic presentation tends to systematize and classify different meanings and concepts of the word noise with the following purposes:

- of avoiding errors, confusions and misunderstanding bonds to the intrinsic contradictions or overlappings or nuances of the lexical labelling;
- of inviting to a deeper penetration into the different «chapters» of «out look».

COMPARISIONS BETWEEN LASER AND CONVENTIONAL AND REMOVAL OF SOLID NASAL LEISIONS

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Chairman, Colleagues, Ladies & Gentleman I am grateful for the invitation to speak at this meeting.

Today I wish to recount and report on experiences I have had using the holmium Yag laser for treatment of solid nasal lesions. Middlesbrough's practice is in the North East of England and we work in a free standing hospital, some people express suprise that it is still standing as it was first built in 1860. Nonetheless we offer a comprehensive ear, nose and throat surgery to a catchment population of approximately 700,000 people. Including myself there are five consultants and two hospital grade doctors. My interest in laser surgery in the nose began to develop about five years ago when we acquired a Holmium Yag laser in our Department. We have had a carbon dioxide laser in the Department for over 12 years but this laser is not so comfortable for intranasal use principally because the laser is not delivered proximally to the tissue which one wishes to treat. In addition to this it has limited applitive function for bone or cartilage and it might be difficult to use the CO_2 laser with an endoscope as there would be a serious risk of the operators hand or instrument entering in the line of fire of the laser.

The holmium laser has a fibre tip delivery and applitive function is only obtained if the tip of the fibre is close to the tissue at more then 0.5cm distance there is a haemostatic effect.

A second change in nasal surgery has been the introduction of the Hopkin's Rod Telescope. Although the binocular loop and the microscope are also available as magnification systems for use in the nose, the endoscope has become popularised to an extent which neither of those other two modes of magnification have. The possible reasons for this are that the endoscope offers variable magnification depending on proximity to the subject, it is easily manoeuvrable and one can change the angle of view by changing the endoscope. A third development in nasal surgery has been the use of power tools and I shall show this in combination with the laser later.

At the last meeting of this Society I reported on five cases of choanal atresia. On this occasion I wish to show four cases of solid nasal lesions treated with the Holmium Yag laser. As you will see there is various pathology. Taking the patient with transitional cell papilloma first, this was an intranasal lesion and the extent of the lesion can be shown by these scans. This patient had already had a previous lateral rhinotomy to try to remove the transitional cell papilloma but this had been unsuccessful and recurrence had occured. As the recurrence began to cause symptoms the patient elected to undergo further removal and I believe that this would be appropriately performed endonasally. The lesion was fairly high up on the lateral wall of the nose and I decided that the use of the holmium Yag laser would be appropriate. The next slide shows the approach to that area with the fibre of the holmium Yag laser. The endoscope is also used by comparison, that is 4mm dia. It can be seen that there is better access to the upper reaches of the nasal cavity with the fibre because of it's small size. This slide shows that it is probably easier to appraoch that area if the turbinate has already be removed. The next slide shows laser treatment of the papilloma and slide 9 shows the

postoperative appearance. This indicates that the post nasal space is clear and here we see a 12 month follow up showing that there has been no recurrence of the papilloma. You will see this again on the video but I should mention that I use both a debrider and the holmium Yag laser. The debrider is very much quicker for bulk lesions but as mentioned the tip of the debrider would not reach to the same area as the Yag laser and the difference between the diametre of these can be emphasised now. The case that I wish to demonstrate is that of benign lymphoid hyperplasia. This occured in gentleman and his principal complaint was that the nose was blocked and it was also developing recurrent secretory otitisi or otitis media. The next two scans shows the extent of this hyperplasia and it can be seen that there is very little airway in the post nasal space. The area had been previously been biopsied to confirm that there was no malignancy and I decided that it might be appropriate to attempt treatment of this area with the holmium Yag laser. Approaching the post nasal space with the laser is not always easy. And certainly using the endoscope one may be a little cramped for space. You will see on the video which I show later that both instruments can be passed down the same nostril. On this cadoveric speciman there is obviously more room if the endoscope is passed down one side and the fibre and it's carrier down the other. The endoscope can be angled as shown and a wider angle of view obtained so one can look across in effect from one nostril to the other. The next slide shows that the treatment of the lymphoid hyperplasia and finally one can see a post-operative view in that the post nasal space is very much clearer than it was before the operation. At post operative review this particular patient had noted considerable improvement in his airway and in addition to that his otological symptoms had also deminished.

The next patient is one who had defuse non-hodgkin's lymphoma. He was a 70 year old male and had been treated with Chlorambucil. His problem was that his nose was completely blocked because of post nasal space lymphoma. The consequence of this was continuous anterior rhinorrhoea with blocked airway and also gross bilateral secretory otitis media with effusion. The patient, as I say, had been treated medically and I had previously inserted a grommet when the nasal obstruction was not so severe and he was referred again when medical therapy was exerting less control over his disease. I elected to treat him endoscopically and first had to remove some nasal polyps. Thereafter the laser was introduced into the post nasal space and I treated the lesion. However, as has been seen on these previous slides, this was a very gross lesion and as the nose was still considerably blocked after the first surgical intervention a second procedure was attempted. You can see here that there is extension of the lesion into the oropharynx and a lot of the tissue was cleared manually. The laser was used at the end to reduce the amount of blood loss and also to try to clear specific areas. When seen immediately after the operation this patient felt very much clearer in the nose than he had done beforehand.

The final patient on whom I used the holmium Yag laser was a 20 year old student who developed Wegner's Granulomatosis. This disease was treated medically which is entirely correct but one of the unfortunate consequences of her treatment was the development of a right sided nasal airway atresia anteriorally due to Synechia. She also developed some collapse of the nasal dorsum but that was treated with a cartilagenous graft. The synechia I decided to devide using the holmium Yag laser simply because it appeared to me to be the least traumatic way of trying to restore the right nasal airway.

We can turn the video on now and this shows the patients I have just described starting with the nasal synechia, the holmium Yag laser is being used naked eye here, the power is set at 6jules and about 12 pulses/second. I am passing the laser up and down through the synechia in a vertical plain so that I do as little damage as possible to the nasal septum and at the sametime trying to restore the nasal airway. I mentioned the damage to the septum one of the consequence on the left side is that she does have a very dry nasal airway and obviously one does not want to cause a septal perforation.

The next patient on this video is that of a transitional cell papilloma. Here you can see the extent of the mass and initially I am using the laser to biopsy this mass. The laser is used for a while

but then it became clear that this would take considerable time to clear using the laser and for that reason I moved onto using the microdebrider. This is much quicker at getting rid of bulk although there is bleeding afterwards. However it also has the additional benefit of being a fairly precise tool as to where it is used. As you can see that when I have reached a point as far as the debrider will pass I then go back to using the laser for final treatment.

The next piece on the video shows the benign lymphoid hyperplasia, initially this indicates the mass of tissue, next we see partial removal and assessing the extent of the mass and here you can see that I have passed the laser in the right nostril and the endoscope in the left nostril. The septum is on the left of the picture. Here you can see the left side again with eustachian tube cushion coming into view. This was not visible initially. Now I am showing that the sucker tip, this is the end of a metal yankers sucker, indicating that there is room to get up behind the soft palate and into the nasopharynx once the tissue has been oblated. You can visualise the right side of the nasal cavity here, showing minimal tissue damage apart from the oblated area. Finally I am using the laser and the endoscope in the same nostril.

The last patient is the lymphomatus patient and here you can see that the laser is being used in the nose. After a large amount of bulk of tumour had been cleared manually, one also approached the post nasal space to try to clear the bulk of the tissue and reduce the amount of blood loss and at the sametime we finally assessed that the post nasal space was reasonably clear and here you can see the operators finger appearing behind once inserted through the oropharynx. I think that is the samething happening here in a larger magnification. This shows residual tumour which may yet have to go back and clear if the patient obstructs his airway further. Obviously this will depend on whether or not he wishes to undergo further surgery as well.

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Ìèíååâ Â.Í., Ëàëàåâà Ò.Ì., Ñêîïè÷åâ Â.Ã.

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Исследований, касающихся изменении цитоскеслета при бронхиальной астме (БА) в доступной литературе нам не встретилось. Отметим также, что в других областях внутренней патологии исследования, посвященные цитоскелетным белкам единичны, за исключением области гематологии (гемолитические анемии) [9].

С другой стороны, имеются общие для всех типов клеток принципы строения цитоскелета [10], хотя каждый тип клеток, в том числе и эритроциты отличаются своим особым спектром цитоскелетных белков.

В целом, роль цитоскелета в деятельности клеток усматривается в поддержании формы клетки, её способности прикрепляться к другим клеткам и к субстрату, свободе её передвижения, а также в транспорте различных веществ в клетку и из нее.

Наше внимание к цитоскелету определяется теми фактами, которые указывают на то, что цитоскелету отводится важная роль в трансмембранной передаче различных информационных сигналов [18, 11].

Цель исследования — изучить суммарное содержание и распределение цитоскелетного материала в эритроцитах при первичных клинико-патогенетических вариантах БА.

МАТЕРИАЛЫ И МЕТОДЫ.

Обследовано 6 практически здоровых лиц, 12 больных БА (7 больных с атопической БА (АБА) и 5 больных с инфекционно-зависимой БА (ИЗБА).

Количественную оценку цитоскелета окрашенных железным гематоксилином эритроцитов проводили в лизированных клетках по [7]. В качестве лизирующего агента использовали 1% раствор тритона-Х-100 в сочетании с 4 М глицерином. Препараты, окрашенные железным гематоксилином, анализировали на установке "Морфоквант" (Германия) в монохроматическом излучении (λ=540 нм). Определяли интегральную оптическую плотность эритроцитов в относительных единицах.

РЕЗУЛЬТАТЫ ИССЛЕДОВАНИЙ И ИХ ОБСУЖДЕНИЕ.

Нами оценено суммарное распределение цитоскелетного материала эритроцитов у практически здоровых лиц и у больных БА (таблица).

Из таблицы видно, что суммарное содержание цитоскелетного материала в эритроцитах снижено при ИЗБА и еще более существенно при АБА. Судя по имеющимся данным [5], используемая методика оценки цитоскелетного материала позволяет охарактеризовать прежде всего актиновый цитоскелет. Однако следует иметь ввиду, что эффективное функционирование цитоскелета как системы основано на теснейшей кооперации всех его компонентов.

К настоящему времени строение цитоскелета эритроцитов достаточно хорошо изучено по сравнению с другими клетками. Так, в зависимости от электрофоретической подвижности в полиакриламидном геле были выделены и пронумерованы 12 белковых зон с молекулярными массами от 25 до 250 кД. Некоторые белки выделены и охарактеризованы, им даны названия: спектрин, актин, анкирин. Другие до сих пор обозначаются цифрами, соответствующими их положению на электрофореграмме: 4.1., 4.9., 6.7.

Основным белком цитоскелета мембраны эритроцита считается спектрин, которому соответствует на электрофореграмме полосы 1. и 2.

Содержание спектрина составляет около 76% [2]. Молекула спектрина состоит из двух субъединиц: α и β Гетеродимеры спектрина могут самоассоциироваться с формированием фибриллярной основы цитоскелета [6], при этом α-субъединица одного гетеродимера нековалентно взаимодействует с β- субъединицей другого гетеродимера, что приводит к образованию двумерной белковой сети.

Следующим важным компонентом цитоскелета мембраны эритроцитов является актин или белок полосы 5. В эритроците существует две формы актина: Z-актин (неполимеризованный актин) и F-актин (полимеризованный) [6].

Тесно связана со спектрином группа белков сферической формы полос 2.1., 2.2., 2.3., 2.6., носящая название синдеинов или анкирин.

Очень прочно ассоциирован со спектрин-актиновым комплексом белок полосы 4.9., оказывающий существенное влияние на полимеризацию актина [6].

Надо отметить, что цитоскелетные комплексы тесно взаимодействуют между собой, а также с мембраной. Так, актиновые филаменты связаны с молекулой спектрина полимеризующимся концом, что как ускоряет полимеризацию актина, так и укрепляет их взаимодействие.

Процесс связывания спектрина, белка 4.1., белка 4.9. с актином контролируется процессом фосфорилирования. Предполагается, что под контролем фосфорилирования находятся все структурные связи цитоскелета [9]. Что касается связи цитоскелета с мембраной эритроцита, то она обеспечивается на двух участках.

Во-первых, связь обеспечивается взаимодействием спектрин-анкирин-интеграль-ный белок полосы 3, проникающий в липидный бислой. Во-вторых, связь с мембраной возникает за счет взаимодействия белка 4.1. с доменом гликофорина С [6].

Таким образом, выделяют два белковых комплекса цитоскелета: 1) спектрин - белок 4.1. - актин - белок 4.9. и 2) спектрин - анкирин -белок полосы 3.

Нами была изучена еще одна характеристика эритроцитов, связанная с цитоскелетными белками, — это распределение эритроцитов по субпопуляциям в зависимости от содержания цитоскелета (рис. 1).

У практически здоровых лиц распределение субпопуляций довольно равномерно, с модой, которая соответствует субпопуляции эритроцитов с оптической плотностью 70-80 отн.ед.

При ИЗБА происходит перераспределение субпопуляций в сторону субпопуляций с меньшей оптической плотностью. Еще большее смещение моды в сторону субпопуляций с меньшей оптической плотностью наблюдается при АБА, при которой мода характеризует субпопуляцию эритроцитов с оптической плотностью 20-30 отн.ед.

Чтобы охарактеризовать субпопуляции эритроцитов с малым содержанием цитоскелетного материала, обнаруженных при АБА, нами был проведен корреляционный анализ между процентным содержанием эритроцитов с оптической плотностью 30 отн.ед. и менее и процентным содержанием микроцитов (эритроцитов с диаметром 6,5 мкм и менее, выявляемых с помощью прямой эритроцитометрии (проводилась Н.Н.Лукашевской) у одних и тех же обследованных лиц.

Результат не оказался неожиданным - была выявлена существенная положительная связь ($r=+0,605$, $n=11$, $p<0,05$) между названными показателями.

Выявленная связь может свидетельствовать о том, что микроциты характеризуются сниженным содержанием цитоскелетных белков.

Однако встает вопрос о том, не является ли снижение содержания этих белков только отражением малых размеров самих эритроцитов? Чтобы ответить на этот вопрос, нами были проанализированы данные по интегральной оптической плотности эритроцитов при пересчете на единицу площади эритроцитов (размеры эритроцитов анализировали с помощью установки «Морфоквант»).

При ИЗБА интегральная оптическая плотность в расчете на единицу площади эритроцитов составила $0,10\pm0,005$ отн.ед., $n=5$, при АБА $0,07\pm0,006$ отн.ед., $n=7$, $p<0,001$, что достоверно меньше.

Таким образом, можно вполне определенно полагать, что для АБА характерно существенное снижение цитоскелетного материала.

Данный факт помогает еще с одной стороны объяснить выявленный нами феномен снижения агрегации эритроцитов при АБА [1]. Так, в настоящее время известно, что актиновые микрофиламенты соединены с адгезионными рецепторами (например, с рецептором 140 кДа, специфичным к фибронектину) [4].

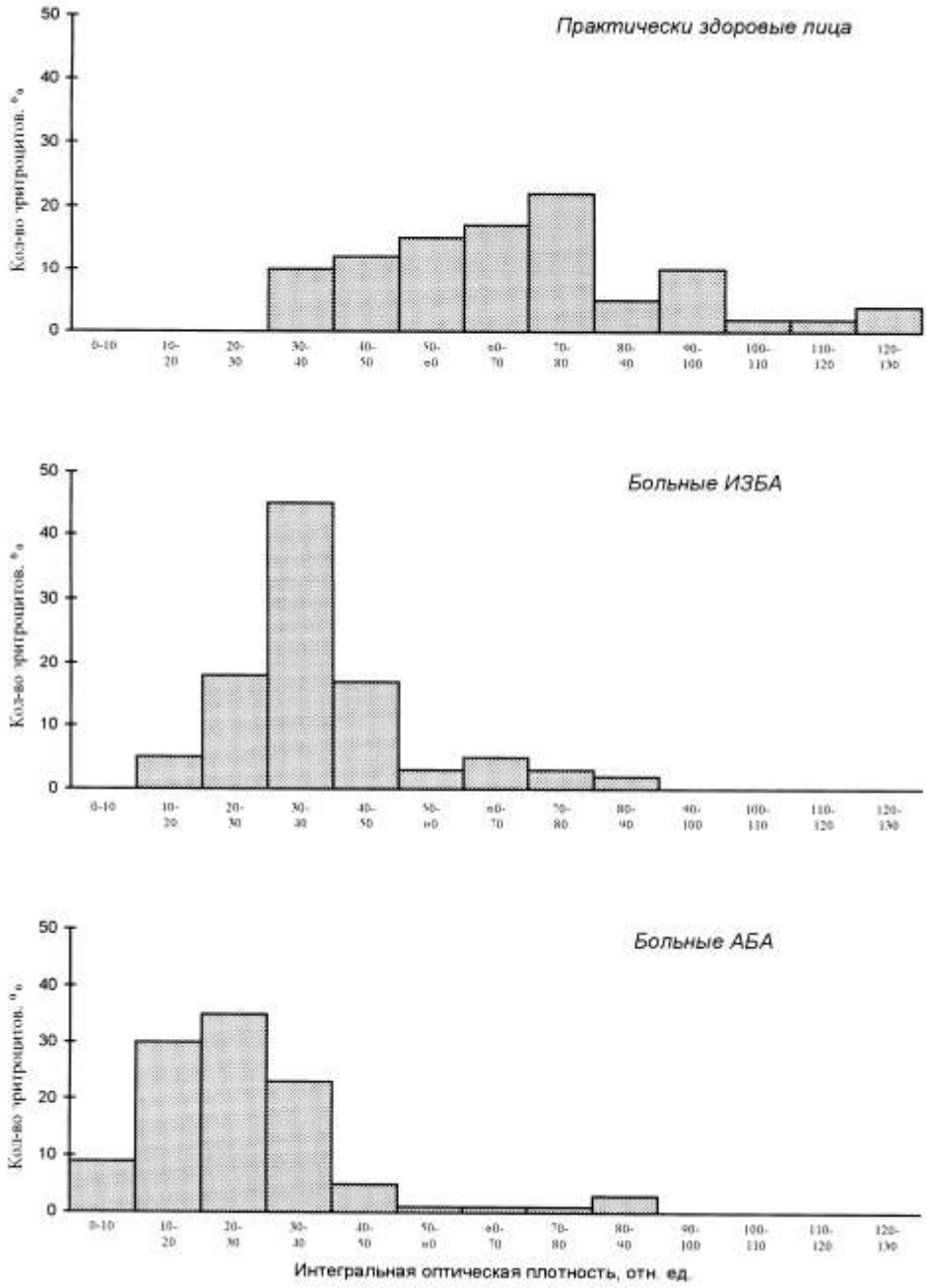

Рисунок 1. ГИСТОГРАММА РАСПРЕДЕЛЕНИЯ ЭРИТРОЦИТОВ В ЗАВИСИМОСТИ ОТ СОДЕРЖАНИЯ ЦИТОСКЕЛЕТНОГО МАТЕРИАЛА

Хотя молекулярные детали этого, процесса только начинают изучаться, вместе с тем можно предположить, что снижение содержания актина или изменение его ориентации в клетке приводят к изменению клеточной кооперации.

Но, пожалуй, наиболее важное значение имеет выявленный нами факт существенного снижения цитоскелетных белков при АБА для понимания мембрано-рецепторных изменений, свойственных этому клинико-патогенетическому варианту заболевания.

Имеется ввиду важная роль цитоскелета в трансмембранной передаче различных регуляторных сигналов, включая гормональные. Отметим лишь, что по современным представлениям, в состав самого гормонального рецептора как функционального комплекса, по-

мимо опознающего звена, входят полимеризованные белки типа цитоскелетных белков, ответственных за латеральную мобильность этих рецепторных молекул и их сопряжение с аденилатциклазой [3,12].

Учитывая возможность регуляторного влияния экзогенного цАМФ на фосфорилирование цитоскелетных белков при АБА, нами были сопоставлены результаты исследования содержания цитоскелетного материала в эритроцитах и скорость их оседания при воздействии экзогенного цАМФ («Serva»). Была выявлена достаточно высокая обратная корреляционная связь между указанными показателями (r= -0,578, n=7), хотя и не достоверная.

Характер выявленной связи указывает на то, что влияние экзогенного цАМФ зависит от исходного состояния цитоскелета, причем при низком содержании цитоскелетных белков возрастает, вероятно, потребность и значение в дополнительных путях, активирующих белковое фосфорилирование. Данное предположение находит обоснование в исследованиях, подтверждающих важную роль цАМФ в регуляции структуры и функции цитоскелета [3,12].

Необходимо в заключении подчеркнуть, что изучение особенностей цитоскелетных белков эритроцитов может дать важную информацию для характеристики аналогичных белков в других клетках и тканях организма, ибо белки, близкие по антигенным свойствам и молекулярной массе спектрину, актину, анкирину, белкам полос 3 и 4.1., обнаружены в клетках головного и спинного мозга, эпителия, скелетной мышцы, миокарда, а также в тромбоцитах и лейкоцитах [2]. В дальнейшем нами планируется исследование особенностей распределения цитоскелетных белков в условиях модуляции мембранной адренореактивной системы.

Peculiarities of erythrocyte cytoskeleton in bronchial asthma
Mineev V.N., Lalaeva T.M., Skopichev V.G.

Aim. The aim was to investigate the content of erythrocyte cytoskeleton material in primary clinico-pathogenetic variants of bronchial asthma (BA).

Materials and methods. 6 healthy men, 12 patients with BA (7 patients with atopic BA (ABA) and 5 patients with infectious- dependent BA (IDBA) were studied. Cytoskeleton was studied by Chentsovs et al. cytophotometric method (1982). The integral optic density was evaluated with help of automatic analyzer «Morphoquant» (Germany) (λ=540 nm).

Results. The erythrocyte cytoskeletal material was decreased in both clinico-pathogenetic variants of BA especially in ABA. The positive correlation (r=0,605, p<0,05) between the content of erythrocytes with decreased cytoskeletal material and the content of microcytes (erythrocytes with diameter of 6,5 mem and less) was revealed.

Conclusion. The phenomenon first revealed by us of the decreased erythrocyte cytoskeletal material in BA may cause the disturbance of transmembrane signal transducing at postreceptor stage.

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ГРАЖДАНСКО-ПРАВОВАЯ ОТВЕТСТВЕННОСТЬ ЗА ВРЕД, ПРИЧИНЕННЫЙ В СФЕРЕ ВРАЧЕБНОЙ ДЕЯТЕЛЬНОСТИИ.

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Существуют различные мнения о правовой природе отношений между медицинским учреждением и пациентом по поводу врачевания. Этот вопрос имеет существенное значение для определения правового положения пациента, его прав с одной стороны, прав и обязанностей медицинского учреждения с другой стороны. К. Б. Ярошенко (1970г) полагает, что эти отношения имеют административно-правовую природу, и лишь причинение материального вреда пациенту медицинским учреждением служит основанием возникновения гражданских (деликтных) обязательств по возмещению ущерба пациенту.

Однако, по мнению М. Н. Малеиной теория административного договора неприменима к отношениям по оказанию гражданам медицинских услуг. Коллектив государственного лечебного учреждения осуществляет свою производственную (лечебную) деятельность и потому не является носителем властных функций по отношению к гражданам-пациентам. Ныне действующие Основы законодательства об охране здоровья граждан 1993г. – это комплексный акт, который содержит нормы различных отраслей права, в том числе и нормы, регулирующие гражданско-правовые отношения, предусматривающие права и обязанности пациентов.

Медицина, являясь весьма своеобразной областью деятельности человека, направленной на сохранение жизни или облегчение тяжких недугов, тем не менее сопряжена с достаточно высокой степенью риска, как при проведении лечения, так и при проведении диагностических мероприятий. Именно поэтому во многих странах, а в последнее время и в России, пристальное внимание уделяется такому деликатному вопросу, как изучение сферы действия и применения института гражданско-правовой ответственности в медицине.

Итак, субъектом ответственности за вред, причиненный при исполнении профессиональных обязанностей в области современной медицины, является медицинское учреждение. Это положение можно прокомментировать, обратившись к ст. 1064, ст. 1068 ГК, где указано, что вред, причиненный личности (или имуществу) гражданина (или организации), подлежит возмещению в полном объеме лицом (в том числе и учреждением, организацией), причинившим вред, если это лицо (учреждение) не докажет, что вред возник не по его вине.

Организация (учреждение) обязана возместить вред, причиненный по вине её работников при использовании ими своих трудовых (служебных, должностных) обязанностей.

Подобные положения фигурируют и в ст. 66 Основ законодательства РФ об охране здоровья граждан (22. 07. 93г.), где указано, что "в случаях причинения вреда здоровью граждан виновные обязаны возместить потерпевшим ущерб в объеме и порядке, установленном законодательством Российской Федерации". Аналогичные положения зафиксированы и в ст. 1068 ГК РФ.

Специфической для юридической ответственности медицинских учреждений и их работников за причинение вреда здоровью пациентов является проблема врачебной ошибки.

Ни в юридической, ни в медицинской литературе не встречается единой классификации врачебных ошибок. Разночтения существуют и в определении понятия "врачебной ошибки", как в праве, так и в медицинской практике.

М. Н. Малеина (1995г.) совершенно справедливо делает акцент в юридической оценке врачебных ошибок на различие между виновными противоправными деяниями медицинских работников (учреждений) и случаями причинения вреда пациенту при отсутствии вины. Первое из названных деяний квалифицируется как правонарушение (преступление, проступок), влекущее уголовную, дисциплинарную, гражданскую ответственность, во втором варианте налицо случай (казус) – отсутствие вины и ответственности. Эта классификация врачебных ошибок с учетом критерия вины медицинских работников (учреждений) подтверждается судебной практикой.

Судебная практика признает отсутствие вины лечебного учреждения (его сотрудников), и юридическая ответственность не наступает, если медицинский персонал не предвидел и не мог предвидеть, что его действия принесут вред здоровью пациента.

Содержанием гражданско-правовой ответственности является гражданско-правовая санкция: возмещение вреда, восстановление в прежнее состояние (реституция), сатисфакция и т. д. В случае причинения вреда здоровью (например, при проведении медицинского эксперимента) эта ответственность состоит в обязанности возместить убытки по случаю болезни потерпевшего и в связи с усложнением его социальной жизни (ст. 1084 ГК РФ "О возмещении вреда в случае повреждения здоровья"), возместить потери в зарплате в связи с временной нетрудоспособностью и в последующий период, а также выплаты по страхованию на случай болезни.

При причинении смерти гражданско-правовая ответственность состоит в обязанности возместить расходы на содержание лиц, которые находились на иждивении умершего, либо получали от него содержание в силу обязанности, поскольку эти расходы не покрываются пенсиями и пособиями из фондов социального обеспечения (ст. 1088 ГК), а также в обязанности возместить расходы на погребение, при условии, что они не были покрыты пособием на погребение, которые выплачены по нормам о страховании на случай болезни (ст. 1094 ГК).

В последнее время значительную роль в определении размеров и характера ответственности в здравоохранении стал играть Закон РФ "О защите прав потребителей", а в частности его ст. 14, предусматривающая имущественную ответственность учреждений в случаях причинения вреда при представлении платных медицинских услуг.

В свою очередь работники лечебного учреждения при наличии оснований для привлечения учреждения (организации) к гражданско-правовой ответственности, несут её в порядке трудовых отношений перед учреждением (организацией). Речь идет о так называемом регрессном иске по трудовому законодательству и о содержании ст. 1081 ГК РФ о праве регресса к лицу, причинившему вред.

Основными условиями наступления гражданско-правовой ответственности лечебных учреждений являются наличие вреда, наличие вины, противоправности и причинной связи между деянием и наступившими последствиями:

а) вина – это необходимое условие наступления всех видов гражданско-правовой ответственности, представляющее собой психическое отношение лица к своему противоправному поведению, и его результатам, включающее возможность предвидеть причинение вреда и желание причинить вред.

б) вред в гражданском праве – это умаление, уничтожение какого-либо блага, наличие неблагоприятных последствий. Лечебное учреждение может причинить вред личности и имуществу пациента. Возмещение вреда, причиненного жизни или здоровью гражданина, в соответствии с положениями российского законодательства, производится с использованием главы 59 ГК РФ (§§ 1, 2, 3). В случае причинения морального вреда пациенту, компенсация морального вреда осуществляется в соответствии со ст. 151 ГК РФ.

в) противоправность означает нарушение закона или иного акта, а также субъективного права лица. Под противоправностью действий (бездействия) медицинских учреждений понимается нарушение их работниками законов или подзаконных актов, регулирующих лечебную деятельность этих учреждений.

Причинная связь между противоправным деянием медицинского учреждения и наступившим вредом – категория философская. Основная сложность – установление причинной связи в тех случаях, когда вредоносный результат не следует непосредственно за противоправным деянием (бездействием). В данной ситуации, на первый план должна выходить грамотная экспертная оценка обстоятельств дела, с учетом достижений современной медицины.

Одной из причин, побудивших обратиться к рассмотрению данной темы явился тот факт, что правоприменительная деятельность в данной области явно неадекватна запросам современного общества.

Существует множество жизненных ситуаций, когда обращение к институту гражданско-правовой ответственности в сфере медицины могло бы упорядочить отношения между лечебным учреждением и пациентом, а также положительно отразиться на качестве лечебного процесса в целом.

Актуальность данной проблемы обусловлена её близостью к повседневной практической деятельности врача и её значимостью как для медработников, так и для пациентов, в связи с чем она нуждается в дальнейшей более глубокой теоретической проработке.

Рассмотрение дел, связанных о разрешением гражданско-правовых вопросов в медицине в настоящее время практически отсутствует. Тем не менее, работа в практической медицине, в том числе и оториноларингологии, заставляет обратить внимание на необходимость более квалифицированной подготовки врачей по правовым вопросам, так как данная категория дел в недалёком будущем может и должна занять ведущее место в рассмотрении взаимоотношений врача и пациента.

ПРИМЕНЕНИЕ СИСТЕМНОЙ ЭНЗИМОТЕРАПИИ (ФЛОГЭНЗИМ) ПРИ ЛЕЧЕНИИ РАДИОМУКОЗИТА У БОЛЬНЫХ РАКОМ ГОРТАНИ.

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При лучевой терапии злокачественных опухолей в зону облучения включаются, кроме опухоли, окружающие здоровые ткани. Особенности расположения патологического процесса в гортаноглотке, гортани неизбежно приводят к развитию местных лучевых реакций со стороны слизистой оболочки, кожи в зоне облучения (А.И.Пачес и др. 1988, Е.С.Огольцова 1984, Л.Д.Линденбратен, И.П.Королюк 1993). Встречаются местные лучевые реакции кожи в виде эритемы, сухого и влажного дерматита. Ю.И.Воробьев (1993) выделяет 3 степени реакции кожи: 1степень - эритема, возникающая при суммарных очаговых дозах (СОД) 30 - 35 Гр; 2 степень - сухой дерматит, возникающий при СОД 40 Гр. При этом помимо гиперемии, отечности, зуда, болезненности появляется отслойка эпидермиса, нарушение функции потовых и сальных желез. Кожа становится сухой, пигментированной. При 3 степени лучевой реакции кожи, при СОД 50 Гр. и выше, развивается влажный дерматит.

Слизистая оболочка является более радиочувствительной, чем кожа, реакции слизистой проявляются в виде эритемы, очагового и диффузного эпителиита. По данным Ю.И.Воробьева (1993) уже при СОД 10 Гр. появляется эритема и отек слизистой оболочки. При СОД 30 Гр. из-за нарушения базального слоя возникают изъязвления под белым фибринозным налетом. Выраженный болевой синдром приводит к нарушению глотания. Усугубляются явления радиомукозита повреждением ацинарных клеток слюнных желез и как следствие - развитием ксеростомии уже после СОД 20 Гр. Происходит потеря и извращение вкуса. Больные отказываются от приема пищи, настаивают на прекращении курса облучения.

Для профилактики радиомукозита Ю.И.Воробьев (1993), Л.Д.Линденбратен, И.П.Королюк (1993) рекомендуют соблюдение нераздражающей диеты, отказ от курения и алкоголя. Для лечения лучевых реакций предлагают использовать антибиотики, обезболивающие средства, щелочные полоскания, масла, витамины и др. А.И.Пачес и др. (1988), Е.С.Огольцова (1984) предлагают проводить перерыв курса лучевой терапии на 10 - 14 дней для лечения радиомукозита. Профилактика и лечение лучевых реакций у больных раком гортани остается актуальной проблемой.

В ЛОР - клинике СПбГМУ им. акад. И.П.Павлова проведено исследование клинической эффективности препарата Флогэнзим в лечении лучевого эпителиита у больных раком гортани.

Флогэнзим - сбалансированная смесь гидролаз животного и растительного происхождения с включением рутина. Препарат снижает активность воспалительных процессов и модулирует физиологические защитные силы организма, уменьшает инфильтрацию плазматическими белками интерстиция и увеличивает элиминацию белкового детрита и депозитов фибрина в зоне воспаления, что в свою очередь, обеспечивает восстановление микроциркуляции, утилизацию продуктов воспаления, улучшение снабжения тканей кислородом и питательными веществами. Так как энзимы действуют на причинные факторы воспалительного процесса, они оказывают вторичное анальгезирующее действие. Рутин, входящий в состав

энзимного препарата, нормализует проницаемость сосудистой стенки, снижая выраженность отека (В.И.Мазуров и др. 1996).

У 15 больных проведено лечение препаратом Флогэнзим на фоне лучевой терапии по поводу рака гортани. У 9 больных лучевая терапия осуществлялась после лазерной эндоскопической резекции гортани по поводу рака (Т1 -Т2), у 2 больных - после экстирпации гортани, у 3 больных лучевая терапия являлась самостоятельным методом лечения рака гортани, у 1 пациента - после боковой фаринготомии, резекции небной миндалины и корня языка. Контрольную группу составили 15 больных, получавших лучевую терапию по поводу рака гортани без применения Флогэнзима.

Таблица 1. Распределение больных по группам

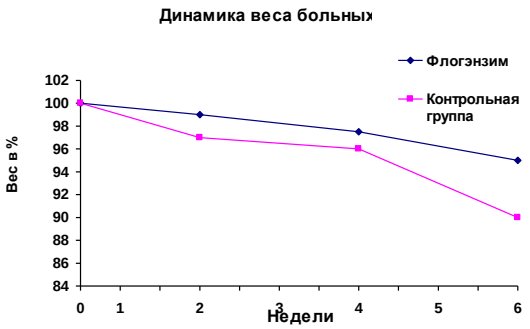
Жалобы больных	Флогэнзим	Контрольная группа
Боль в покое	6	15
Боль при глотании	8	15
Изменение вкуса	8	15
Всего больных	15	15

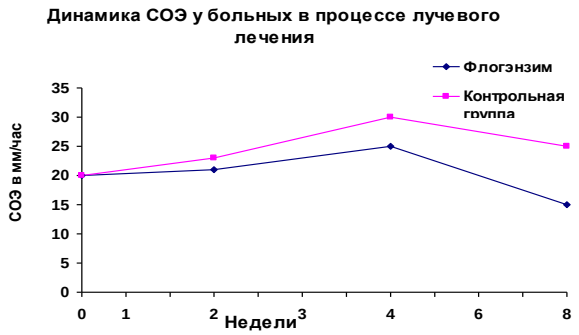
В контрольной группе обычно к середине курса (56 Гр. в течение 30 сеансов) у больных появлялись сухость в горле, боль при глотании. При осмотре определялись отек, диффузная гиперемия слизистой оболочки глотки, гортани, в ряде случаев отмечались фибринозные налеты, корки на слизистой оболочке. Несмотря на проводимую традиционную терапию радиомукозита, включающую применение антибиотиков, нестероидных противовоспалительных препаратов, местных анестетиков, в 4 случаях пришлось делать перерывы в лучевой терапии из-за выраженных явлений лучевого эпителиита, повлекших отказ больных принимать пищу. Явления лучевого эпителиита сохранялись после завершения курса лучевой терапии в сроки от 3 недель до 3 месяцев, что приводило к ограничениям в питании больных, необходимости применять медикаменты. В группе больных, получавших помимо традиционной терапии 2 таблетки Флогэнзима трижды в день в течение 10 дней, ни в одном случае не было отмечено развитие радиомукозита 2 степени, формирование фибринозных налетов, корок, изъязвлений. Лучевые реакции со стороны кожи и слизистых оболочек протекали намного легче, ни в одном случае не потребовалось прерывать курс лучевого лечения.

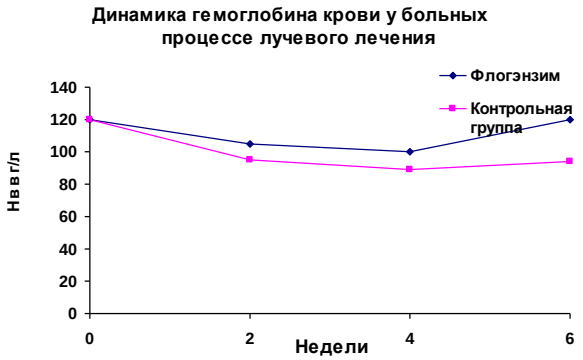
Таблица 2. Выраженность лучевых реакций у больных раком гортани

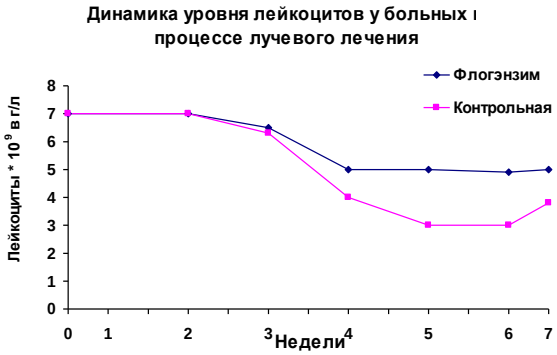
Лечение	Традиционное + Флогэнзим 2 таблетки 3 раза в день 10 дней	Традиционное
Число больных	15	15
1-я степень радиомукозита	11	8
2-я степень радиомукозита	0	7
Вынужденное прерывание курса лучевого лечения	0	3

Больные продолжали принимать обычную пищу, что несомненно сказывалось на их общем состоянии. Так, потеря веса к концу курса лучевой терапии у больных, получавших Флогэнзим, составила 5% от исходного веса, а в контрольной группе - в среднем -10%. Уровень лейкоцитов крови, в среднем, снижался в контрольной группе до 3,0 х 10^9 л, а у больных, принимавших Флогэнзим, до 5,0 х10^9 л. Менее выраженными были изменения уровня гемоглобина и СОЭ у больных, получавших системную энзимотерапию, по сравнению с контрольной группой. Явления лучевого эпителиита в группе больных, получавших Флогэнзим, стихли к исходу первой недели после окончания курса лучевой терапии.









Применение системной энзимотерапии на фоне лучевой терапии существенно уменьшает выраженность лучевого эпителиита, улучшает самочувствие и общее состояние больных. Отмечена хорошая переносимость препарата больными, побочных явлений не отмечено. Проведенное исследование позволяет рекомендовать системную энзимотерапию для профилактики и лечения лучевых поражений слизистых оболочек и кожи на фоне радиотерапии рака гортани.

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ENDOLARYNGEAL CONTACT LASER SURGERY AND VOICE FUNCTION

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ABSTRACT

The paper deals with the analysis of the voice function in patients with laryngeal pathology who had undergone Nd:YAG contact laser surgery. Surgery technique is believed to be gentle and sparing not only structurally but also functionally. It was shown that the methods of function evaluation of phonation such as the voice dynamic range,the main tone testing, transient characteristics of speech tracing, spectrography and elecroreolaryngography can serve as a helpful tool in diagnostics and treatment follow-up.

Keywords: Benign laryngeal growths, cysts, scarringx, hypertrophic laryngitis and cancer tumours comprise an essential group leading to phonation disturbances.

In recent years essentially new surgical approaches have been initiated in the management of these pathologies.

It is assumed that voice function quality is dependent not only on the nature,extent and site of the pathology but, also on the technique of the surgery employed and, consequently, on the degree of operative trauma. Contact laser excisions are, among modern sparing methods of laryngeal surgery. It has been shown that contact laser methods are more advantageons as compared to conventional surgery[2].

The present investigation is aimed at exploring phonation in patients with various laryngeal pathology after Nd:YAG contact laser surgery.

CLINICAL MATERIAL

A total of 206 patients underwent Nd:YAG contact laser surgery with subsequent analysis of phonation pre- and postoperatively. Clinical material is represented in Tab. 1.

SURGICAL TECHNIQUE

LTN-102 Model (Russia) of Nd: YAG laser was used at 18–21 w/cm^2 output of the quartz rod tip. The following contact manner of applying beam to the tissues was used: dissection, total coagulation and excision with subsequent ablation of the surgical wound. Surgery was made under local application or general anaesthesia.

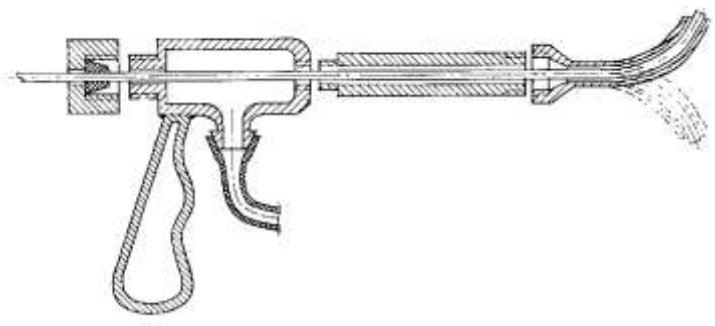

Fig. 16. Laser hand-piece for endolaryngeal surgery under inderect laryngoscopy.

Table 1. Distribution of Patients with Laryngeal Pathologies

Diagnosis	Age and Sex								
	16-25		26-44		45-59		60-74		Total
	M	F	M	F	M	F	M	F	
Hypertrophic laryngitis			3	23	30	31	13	11	111
Fibromas		2	17	20	8	7	1	4	59
Papillomas and Papillomatosis		2		4					6
Angiomas			1	2		1			4
Membranes and cicatrication				2		2	1		5
Polyps and polyposis (Reincke)					1				1
Cancer (Tis,T-1)					11		9		20
T o t a l		4	21	51	50	41	24	15	206

A special handpiece (Fig. 1) was designed for use under indirect laryngoscopy and local anaesthesia. The narcosis was combined with high frequency ventilation of the lungs via tracheal puncture and microlalyngoscopy.

PHONATION TESTS

The battery of tests included evaluation of the dynamic range, analysis of frequency of the main tone, dynamic spectrography, oscillographic recording of transient processes of speech, electroglottography (electroreolaryngography-ERLG).

The dynamic range of voice was measured as the difference in voice intensity when one pronounced tongue-twisters or was singing vowels [a:], [ae] or [i:] at fortissimo (FF) or pianissimo (PP) levels. Investigation of «transient» dynamic acoustic characteristics of speech was carried out by comparing sound combinations such as «explosive consonant-vowel», the envelope of the oscillogram of speech signal being the testing parameter.

Spectrum voice characteristics in «frequency-intensity-time» coordinates and the main tone were tested in singing [a:] as note E (me). For this purpose «Universal spectrograph-oscillograph-PS USO» package of software was used. The basic features of PS-USO were as follows:

– maximal speed of input (output) of analogous signals was 250 kHz;
– maximal duration of continuous inputting (outputting) signals at the frequency of discretion 5 kHz was equal to 38 s;
– the number of time windows of dynamic spectrogram was 150;
– the number of frequency filters of dynamic spectrogram was 92;
– the minimal time for dynamic spectrogram calculation equalled to 2s.

PS USO provided for:

– recording and editing of signals;
– synchronous acoustic and oscillographic signal control in the current time window;
– reception of instant spectra (temporary sections) and integral spectra;
– precise measurements of dynamic spectrum with duration values frequency and amplitude displayed on the monitor screen by means of cursor;
– analysis of the main tone frequency with a simulteneous display of the tonogram and oscillogram of the signal analyzed;
– storage of the results of processing dynamic spectrograms as the database;
– output of spectrograms and oscillograms to printer in various formats.

In ERLG «intercordial» (between vocal cords) electric resistence of the larynx was being measured during phonation of sound [a:] at forte and piano levels. The glottograph possessed its own resonant frequency of 1 mHz and the tract passband of 10–1000 Hz.

Investigations of the voice function were permanently conducted preoperatively, immediately after surgery or next day postop, on the 6–8 day postop and in some cases on the 20–25 day after the operation.

RESULTS

82% of operations were performed in the outpatient department under indirect laryngoscopy and only 18% of patients underwent surgery in the Clinic under narcosis and high-frequency ventilation of the lungs. The latter group comprised patients who poorly tolerated application anaesthetics or people with non-standard anatomy of the neck and larynx. Some patients of that group had large growths or neoplasms located in subglottic space. Many had a rather high pharyngeal reflex or a severe concomittant somatic pathology.

Generally speaking, it was presumed that the degree of phonatory disturbances was directly related to the volume and localization of pathology. The voice frustrations were revealed to be greater when the free edge of the vocal cord was involved (even when the pathology was comparatively small in size).

First of all, phonation altered in respect to the voice dynamic range which diminished to 11+8 dB (normally that index was 30+8 dB) when testing vowels or patters at fortissimo-pianissimo levels (Fig. 2).

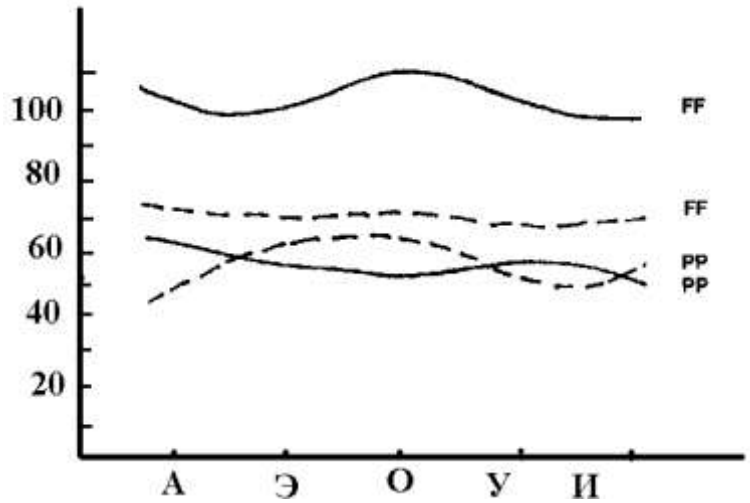

Fig. 17. The voice dynamic range (dB) in a patient, aged 38, with vocal chord fibroma pre- and postoperatively. Vowels at fortissimo (FF) and pianissimo (PP) levels. Dotted line – preop; solid line – postop. Ordinate-level of voice intensity in db (re 2.10_5-5_0 Pa). Abscissa-singig vowels

In 13% of those patients the inversion phenomenon was recorded. It was demonstrable as a lower level of vowels intensity (especially [o:]) in an attempt of a patient to sing vowels at fortissimo (Tab. 2).

Table 2. **Dynamic Range of the Voice under Normal and Pathological Conditions**

Tested	Voice Loudness	Level of Sound (dB SPL)
Norm	Fortissimo (FF)	92+8
	Pianissimo (PP)	62+9
	Dynamic Range (DR)	30+7
	FF	59+10

Preop	PP	48+9
	DR	11+8
	FF	79+11
Postop	PP	58+11
	DR	21+9

In analyzing transient processes of speech function it was observed that relative displacement of energy from vowels to consonants took place, especially towards fricative and explosive consonants (Fig. 3).

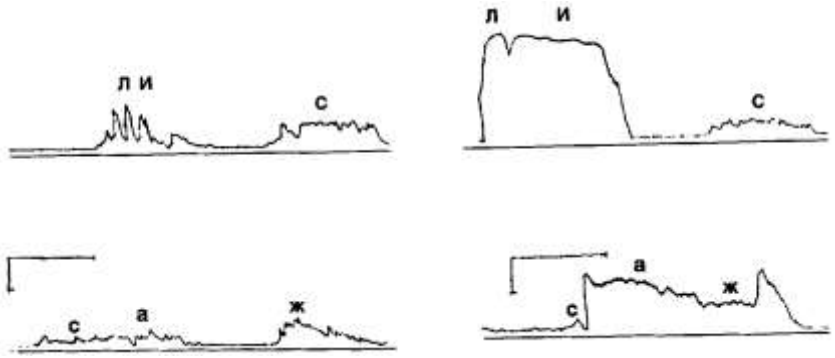

Fig. 18. Envelope of oscillograms of speech signal composed like «sonor vowel-fricative vowel» in patient, aged 42, preoperatively (left) amd after surgery (right). Calibration: 10 dB along ordinate and 1 s along abscissa.

The spectrum of vowels and patters was characterized by flattening of the formant structure.

The main tone level was also found to drop along with a higher noise level (Figs. 4 and 5).

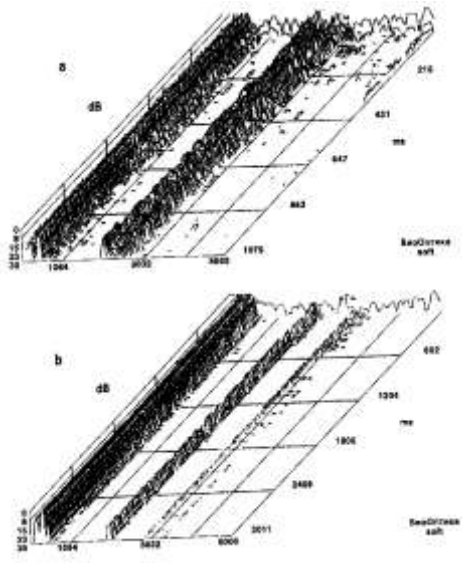

Fig. 19. Spectrogramm in «intensity-frequency-time» coordinate in the patient with laryngeal papilloma preop (A) and postop (B).
Note: R – dynamic range; S – analysis band; B – fiber width; T – time analysis.

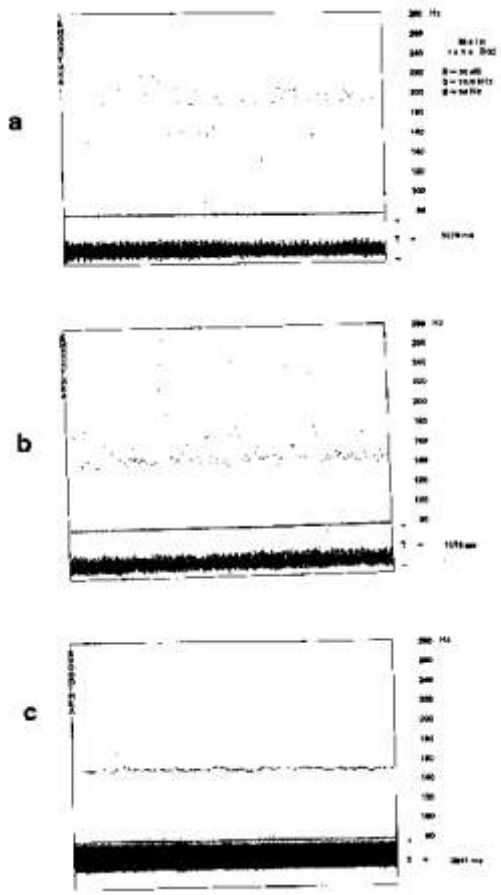

Fig. 20. The main tone in a patient, aged 22 with angioma of the larynx. a – prior operation; b – in a fortnigt post operationem; c – in 4 months post operationem.
Dotts above – cumulative data of the main tone.
Bellov oscilogram of the sound [a] at not E (me).

The following features could be noted in ERLG: a/in small, fixed nodules along the free edge of vocal cords as well as in diffuse forms of hypertrophic laryngitis with an incomplete closing up of the cord the frequency of cords vibrations corresponded to that of the main tone, but the amplitude of vibrations was somewhat lower than under normal conditions; b/in small movable nodules («pedunculated») along the free edge of vocal cords ERLG was of an aperiodic type; c/in pathologies with restricted laryngeal mobility ERLG was low and the frequency of ERLG vibrations was of the asynchronic type (Fig. 6).

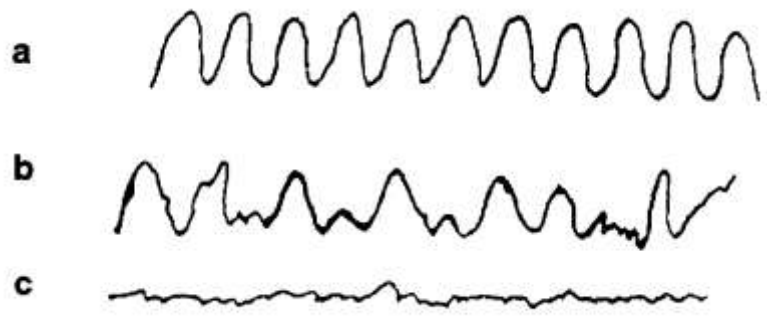

Fig. 21. Electroreolaryngograms (glottograms)
a – norm (control); b – right vocal cord fibroma; c – laryngeal papillomatosis.

Immmediately after surgery the voice function tended to improve only in patients with pedunculated nodules. On the 7–8th postoperative day phonation became better in 77% of the patients, in 12% of patients there were no changes in the quality of the voice and the phonation was impaired in 11% of the patients observed. The latter group predominently consisted of cancer patients with T2 tumours affecting the middle laryngeal portion.

Objectively phonatory amelioration was displayed by the dynamic range increase up to 21+8 dB, relative transition of energy from consonants (muffled, fricative and explosive) to vowels as well as by better pronounced formant structure of vowels, patters spectrum and the main tone vocalization.

All the data presented suggest that contact Nd: YAG laser surgical techiques are relatively sparing not only morphologically but functionally as well. We believe that in evaluation and management of laryngeal pathology it is not only motor function but, more particularly, voice function which is of greater clinical significance.

CONCLUSION

1. Endolaryngeal contact Nd: YAG laser surgery under indirect laryngoscopy can be regarded as a technique sparing both morphologically and functionally.

2. The authors personal experience indicates that indices of phonation, such as the voice dynamic range, transient characteristics of speech, the level of the main tone and the degree of its vocalization, spectrography and electroreolaryngography are diagnostically significant and, therefore, clinically valuable.

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REFLECTIONS ON TREPANOPUNCTURE OF FRONTAL SINUSES

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In the past few years mention has occasionally been made at meetings of different levels that frontal sinus trepanopuncture is not a sufficiently sparing intervention or that methods of functional endoscopic surgery are gradually supplanting trepanopuncture as an operation on the frontal sinuses (N. A. Arefieva, T. M. Yanborisov, E. I. Saifullina, 1996). In the works of clinicists of other countries the results of that operation for frontal sinusitis are referred to but very rarely (J. Sipila et al., 1996), some of the authors pointing out that such an intervention involves the risk of penetrating into the anterior cranial fossa (I. Hermann, 1995).

What are then the aims generally pursued in the treatment for non-complicated acute or chronic frontal sinusitis? First of ally they include prompt cessation of the local algetic symptom, removal of the pathologic contents from the frontal sinus lumen, restoration of the normal function of the nasofrontal duct and stimulation of the mucous membrane reparative processes. Wherever conservative treatment fails, those aims can be achieved to perfection by means of trepanopuncture,

i. e. by boring a small orifice in one of the frontal sinus walls with subsequent drainage for the duration of the treatment. The intervention is only slightly traumatic since, in performing it, a small sector of soft tissues (3. 5 mm in diameter) of the supraciliary region is removed and an osseous trepanation canal of the same diameter is formed in the frontal sinus wall. The mucous membrane of the frontal sinus is medicated through a cannula in the sinus wall. This kind of treatment is most often attended by natural restoration of the patency of the nasofrontal duct. There is no doubt that in the case of a nasofrontal block a reasonable combination of the least traumatic intervention and radicalism is conducive to the most favourable outcome. In the overwhelming majority of patients the nasofrontal duct functions are restored, as a rule, 2 or 3 days after trepanopuncture of the frontal sinus. Of no small importance is also the short period of postoperative treatment, not usually exceeding 5 or 7 days, after which the patient returns to normal social life, undergoing no further treatment in Connection with that condition. Complications following trepanopuncture at the ENT clinic of the Rostov State Medical University for the 20-year period of observations amount to 0.001 per cent of the total group of patients, the figure being considerably lower than that of complications following endonasal interventions (I. Hermann, 1995). The safety of the operation and prevention of complications are ensured by the use of devices of our own design (A. G. Volkov, 1986). The cosmetic defect in the supraciliary region disappears in 6 to 7 months, and the trepanation canal in a large number of patients is filled with new osseous tissue 1 to 1.5 years after the operation. The percentage of recurrence, which in some clinical papers is represented by rather high figures (V. G. Chernykh, 1974; G. Lange, 1980), in the ENT clinic of the Rostov State Medical University amounted in 1980-1997 to 0. 6-0. 8 percent (A. G. Volkov, 1996). In the event of relapses endo- or extranasal interventions were undertaken. Thus, it is evident that trepanopuncture produces no adverse effect on the patient's system and acts sparingly with good curative results.

Adherents of endonasal functional surgery contend that endonasal revision of the affected frontal sinus is the optimal intervention in cases of chronic frontal sinusitis with occlusion of the nasofrontal duct. In so doing, a portion of the ethmoidal sinus cells are destroyed, and the nasofrontal duct is surgically widened, i. e. an operation controlled under the microscope, formerly called endonasal dissection of the frontal sinus, takes place, one of its variants being referred to as "dilatation of the nasofrontal duct" (R. Kashinskas, S. Liudkavicene, 1975). Different types of surgical intervention along with original tools were used for that purpose (L. Grunwals, 1912; F. S. Bokshtein, 1949; A. G. Likhachev, 1963). Incidentally, for performing endonasal trepanopuncture V. G. Chernykh (1974) proposed an arrangement devised by him which consisted of a special probe inserted into the frontal sinus via the nasofrontal duct and a cylindrical milling cutter which entered the frontal sinus lumen along the probe and formed a new anastomosis of a diameter larger than that of the natural one. The mucous membrane of the nasofrontal duct has a marked tendency to cicatrization, and its traumatic injury would inevitably cause an inflammatory process and, consequently, cicatricial stenosis of the nasofrontal duct. In their quest to lower the number of relapses after radical surgical interventions in the frontal sinuses, rhinosurgeons of the first third of this century noted that the size of the artificially made nasofrontal anastomosis had no effect on its normal functioning. It was found that after an operation on the frontal sinus preserving its pneumaticity, irrespective of the diameter of the artificially formed nasofrontal anastomosis, its lumen was narrowing considerably in the course of the 1 to 3-year postoperative follow-up observation, thus approaching the diameter of the natural nasofrontal duct. With this evidence the clinicists gave up increasing considerably the diameter of the lumen of the nasofrontal anastomosis when performing extranasal intervention in the frontal sinus. It is hard to tell what processes prevail in the tissues of the artificially formed nasofrontal anastomosis, as in some cases stenosis develops while in others the cicatrization process stabilizes at a certain level, bringing about no substantial narrowing of the anastomosis. Thus, endonasal dissection of the frontal sinus (or its revision) cannot be regarded as a sparing intervention since it involves a considerable destruction of the tissues: osseous structures and particularly vulnerable muciparous cells of the mucous membrane of the nasofrontal anastomosis.

Adherents of the conservative treatment for acute and chronic inflammatory processes in the perirhinal sinuses, the frontal sinuses included, believe that it is possible to dispense with surgical interventions (K. Albegger, 1982). However, H. Grunberg (1971), in performing direct examination of the perirhinal sinuses with an endoscope, noted that in young (20-30-year old) patients chronic sinuitis develops at a slow rate, seldom uninterruptedly, forming on the mucous membrane of the perirhinal sinuses, after respiratory virus infections, cushion-like infiltrates with no clinical signs. In the meantime, M. M. Govorun (1992) points to immunological "trace" changes, prerequisites for recidivation. Such natural reaction of the mucous membranes of the perirhinal sinuses would be undoubtedly more marked in the event of no treatment. Parenteral administration of potent antibacterial drugs produces an antiinflammatory effect on the structures of the frontal sinuses. However, as proved by P. V. Sergienko (1971), in the event of inflammation of the perirhinal sinuses, the local impact on their tissues exceeds considerably the effect of parenteral drug administration. A change in the tactics of treatment for inflammation of the frontal sinuses without restoration of the natural or provocation of forced drainage of their lumina will inevitably lead to the development of a chronic inflammatory process in the mucous membrane with such consequences as mentioned in the foregoing. Besides, the extensive practical experience in the treatment for frontal sinusitis proves that there are many patients in whom a marked local algetic symptom is not associated with the presence of pathlogical discharge in the sinus lumen. In such cases the local algetic symptom is, probably, evoked either by abnormality of mucociliary clearance in the sinus lumen (N. Schenck, E. Rauchbach, J. Ogura, 1974) or by destabilization of gas exchange in the sinus cavity (S. Loring, S. Tenner, 1973). Thus, J. Traserra-Parareda (1983) and A. B. Frenkel (1970) contended that sinuitis proper accounted for only 5 percent of the pain in the frontal region, the rest being due to obstruction of the nasofrontal duct and irritation of the nerve endings in the region with projection of the pain stimulation to the corresponding supraciliary region. Pioneers of trepanopuncture W. Kummel (1921) and K. Beck (1937) in describing its results in patients with frontal sinusitis with no contents in the frontal sinus, indicated that irrigation of the frontal sinus with infusion into its lumen of suprarenin (adrenalin) solution was sufficient to restore normal aeration of the mucous membrane and the functioning of the nasofrontal duct with resultant recovery of the patient. J. Zange, F. Moser (1940) concurred; they associated local headache attending frontal sinusitis with deterioration of the partial pressure of the air in the sinus lumen.

Our findings are consistent with the views of those eminent clinicists. In the period of 1995-1997 a total of 350 patients with a local algesic symptom of frontal sinusitis were operated on at the ENT clinic of the Rostov State Medical University. In 45 patients 12.85%) the frontal sinus was found to have no contents after trepanopuncture; 12 of the subjects were at once and forever rid of local pain in the frontal region after infusion into the sinus lumen of 0. 5-1. 0 ml of adrenalin hydrochloride solution immediately after irrigation. This points to the development of a mucous membrane edema with venous congestion and lymphostasis, especially in the region of the frontal ostium of the nasofrontal duct. Our rheographic studies of the frontal sinus mucous membrane also point to vascular disturbances coincidental with inflammatory processes in the sinus (A. N. Pomoukhina, A. G. Volkov, N. N. Filimonov 1981). During endonasal interventions under optical devices of high resolving power destruction is carried out of the osseous tissue and mucous membrane of the nasofrontal duct, including the more sensitive muciparous cells in the region of the frontal ostium of the duct which, in our opinion, is more traumatic than trepanopuncture of the frontal sinus, provided, of course, there are indications for one or the other surgical treatment. Unjustified are the concerns about the possible development of complication and a considerable number of relapses following the treatment for non-complicated frontal sinusitis by means of trepanopuncture of the frontal sinus. This contention is based on twenty odd years of experience in treating for frontal sinusitis, using trepanopuncture as outlined above and utilizing tools of our own design.

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ÏÐÎÔÅÑÑÎÐ ÑÒÀÍÈÑËÀÂ ÌÈÕÀÉËÎÂÈ× ÑÎÊÎËÅÍÊÎ / Ê 60-ËÅÒÈÞ ÑÎ ÄÍß ÐÎÆÄÅÍÈß/

28 марта 1998 года исполнилось 60 лет со дня рождения и 37 лет врачебной, научной, педагогической и общественной деятельности доктора медицинских наук. профессора Станислава Михайловича Соколенке. Станислав Михайлович родился на о. Соловки. После окончания в 1961 году Днепропетровского медицинского института работал в поселке Соленое Днепропетровской области районным оториноларингологом. С 1963 г. - ординатор ЛОР отделения областной клинической больницы им. И. И. Мечникова, а с 1964 года сначала аспирант, а затем ассистент кафедры ДМИ.

В 1967г. успешно защитил кандидатскую диссертацию на тему: "Состояние перифокальных тканей гортани при поражении ее раком", а в 1984 году докторскую - "Реконструктивная хирургия верхних дыхательных путей и глоточно-пищеводных дефектов у больных раком "гортани". С 1995 г. Станислав Михайлович - профессор кафедры оториноларингологии Днепропетровского медицинского института. С 1983 по 1991 год заведовал кафедрой онкологии ДМИ, а с 1991г. по настоящее время вновь профессор ЛОР кафедры Днепропетровской медицинской академии.

С. М. Соколенко является одним из пионеров разработки и внедрения нового направления в ЛОР онкологии - хирургической реабилитации голосовой функции гортани после удаления по поводу рака, в частности, трахеоглоточного и трахеопищеводного шунтирования. С. М. Соколенко внес большой вклад в усовершенствование пластической хирургии ЛОР органов. С. М. Соколенко опубликовано 180 научных работ, в том числе 9 монографий. Он автор 10 изобретений и патентов. 55 рационализаторских предложений. С. М. Соколенко - крупный ученый, блестящий хирург, ему доступны все разделы патологии ЛОР органов, прекрасный педагог. Станислав Михайлович большое внимание уделяет подготовке кадров. Под его руководством защищено 3 кандидатских диссертации, подготовлена к защите 1 докторская диссертация.

Большую педагогическую, лечебную и научно-исследовательскую работу С. М. Соколенко сочетает с общественной деятельностью. В течение нескольких лет он был проректором ДМИ, является членом правления научного общества оториноларингологов Украины, членом редакционного Совета журнала "Вестник оториноларингологии".

С. М. Соколенко отличают неиссякаемая энергия, энтузиазм, прямота и принципиальность, чуткость, искреннее, душевное отношение к больным и коллегам по работе, скромность, личное обаяние и постоянное стремление к познанию и совершенствованию.

Все это вызывает глубокое уважение у тех, кто общается с этой весьма незаурядной личностью.

В 1996 году в Стокгольме (Швеция) Станислав Михайлович был избран академиком Международной академии оториноларингологии-хирургии головы и шеи.

Станислав Михайлович Соколенко - активный участник многих съездов, конференций как у нас в стране, так и за рубежом, где выступал с интересными и ñîäåðæàòåëüíûì äîêëàäàì.

Ñâîå 60-ëåòèå Ñòàíèñëàâ Ìèõàéëîâè÷ âñòðå÷àåò â ðàñöâåòå òâîð÷åñêèõ ñèë è íîâûõ ïëàíîâ â ðàáîòå.

Ìû, åãî ó÷åíèêè, êîëëåãè è äðóçüÿ, æåëàåì äîðîãîìó Ñòàíèñëàâó Ìèõàéëîâè÷ó çäîðîâüÿ, ñ÷àñòüÿ, íåèññÿêàåìîé òâîð÷åñêîé ýíåðãèè, äàëüíåéøèõ óñïåõîâ.

Êîëëåêòèâ êàôåäðû è êëèíèêè îòîðèíîëàðèíãîëîãèè Äíåïðîïåòðîâñêîé ãîñóäàðñòâåííîé ìåäèöèíñêîé àêàäåìèè.

Äíåïðîïåòðîâñêîå îáëàñòíîå íàó÷íîå îáùåñòâî îòîðèíîëàðèíãîëîãîâ

70TH ANNIVERSARY

On April 23. 1999, Georgy Aronovich Feigin, Doctor of Medicine, professor Academician and Corresponding Member of respectively, the International and the American Academies of Otorhinolaryngology - Head and Neck Surgery, the Celebrated Doctor of the Kyrgyz Republic is tuming 70 years.

G.A. Feigin was born in 1929 in Namangan city of Uzbekistan. In 1953, he graduated from the Tashkent Medical Institute and 3 years was working as an otorhinolaryngologist in Begobot town in Uzbekistan. In 1956-59, he was a post-graduate student, and later, until 1964 was working as an instructor at the ETN departments of the Tashkent and Samarkand Medical Institute. In 1964-1976, he was the head of the ENT department at the Chita Medical Institute, and from 1977 - at the Kyrgyz Medical Institute. In 1997, he became the Head of the professor ENT - HNS course at the Kyrgyz Center of advanced training for medical and pharmaceutical staff. He defended thesises: in 1961 - for M. D. and in 1971-for Ph. D. He is the author of the 160 published works, 12 books and 7 inventions. He supervised preparation of 18 dissertation papers for the M. D. degree. Currently he is supervising researchers working on 1 Ph. D. and 3 M. D. thesises. The range of his scientific interests is wide: cholesteatoma of the middle ear and its effects on proteolytic and other enzymes, mastoideplasty and its role in resistant purulent discharge front ear and hearing-improving surgery, otogenic intracranial complications, diphtheria bacterial carriage and chronic tonsillitis, foreign bodies in lower respiratory tract, chemical injury to esophagus, surgical and post - operative treatment of laryngeal and laryngo-pharyngeal cancer, tracheostoma, bleeding and thrombosis in ENT diseases, etc.

He investigated histotopography of the laryngeal cancer in relation to primary location and dimensions of the process in an organ; this allowed to define the borders of dissection within healthy tissues of an affected laryngeal area. This research became the basis for ascertaining indications to organ-saving surgery. It also improved the surgical outcome due to bigger variety of such operations. G. A. Feigin suggested a resection variant in cancer of epiglotis and cords, extended anterior-lateral resection with the reconstruction of the lateral laryngeal wall using shaped tracheolaryngopecsia, horizontal resection with preservation of the upper laryngeal constrictor, modifications of anterior-lateral and horizontal resections, resections of larynx and laryngectomya by radical surgical program, ways of forming stable canula-free tracheotomy modified variants of organ-saving and organ-removing operations in laryngo-pharyngeal cancer and methods of feeding without tube after laryngeal resection that significantly improved post-operative condition of the patients. He studied diseases of larynx after cancer surgery and recommended ways of their treatment Prof. Feigin developed and introduced into the practice a modified drug aerosolic-oxigen therapy of stenosing larygotracheobranchitis, a method of treatment of cholestiatoma otitis, ways of repeated tracheostomas contributing to stable opening of stoma and relieving patients from canula, surgical provocation for brain prolapse and, as an extreme measure, of reduction of intracranial pressure in agonizing patients with otogenic intracranial complications, etc. He was the *first* to prove that progressive necrosis in esophagus and kidney lesions in poisoning with caustic substances is largely due to thrombohemorrhagic syndrome and, based on this, he suggested an anticoagulant and fibrinolytic therapy during the first days after the injury. Among his books noteworthy are: Diphtheria carriage, Tashkent, 1968; Treatment of patients and prevention of functional disturbances after laryngeal resection. Chita, 1974; Throat defects in laryngeal cancer surgery. Irkutsk, 1978; Acute stenosing laryngotracheobronchitis in children, Aima-Ata, 1981: Basics of clinical pharmacology for ENT doctors, Frunze. 1985; Hemorrhage and thrombosis in ENT diseases, Frunze, 1989; Tracheotomy and tracheostomy, Bishkek. 1993: Vasomotor rhinitis. Bishkek. 1994; Rhinitis in children. Bishkek, 1995. In the book "Diagnostic and tactical mistakes in the treatment of laryngeal cancer" (E. S. Ogoltsova. E. G. Matyanin, Moscow, 1989). G. A. Feigin wrote chapter 6: Tactical mistakes in organ - saving surgery of laryngeal cancer. He wrote 3 chapters for a 5 volume manual on otorhinolaryngology.

Throughout his career, G. A. Feigin was actively engaged into surgical activity. His brilliant skills of a practical doctor have allowed and are allowing him to perform hearing-improving opera-

tions, surgery for laryngeal. laryngopharyngeal and upper jaw cancer, for persistent stenosis of various origin, to render surgical treatment to patients with tumors of salivary gland located near ear, to perform lateral rhinotomy for removal of extensive angiofibromas of the base of the scull and malignant tumors of nasal cavity and ethmoidal labyrinth, as well as many other ENT and neck operations. He generously shares his extensive experience with his student and younger doctors, contributing to the quality of care in ENT hospitals of the Chita and Kyrgyz Medical Institute, the level and quality of care and teaching at the clinic for ENT head and neck surgery at the Kyrgyz Medical Institute. He is an excellent lecturer and instructor.

While Prof. Feigin headed the ENT department of the Kyrgyz Medical institute, the level and quality of care and teaching at the clinic for ENT head and neck surgery of the Kyrgyz Medical institute. There are 5 different course oriented teaching rooms there. The operation section consists of 3 operation rooms where simultaneously 4 operations in horizontal and 2 ones in setting position can be performed

For 20 years he was the chief ENT expert of the Ministry of the Health of the Kyrgyz Republic. Beginning from 1964 and until now he is heading the association of ENT doctors. Meetings of the association go off in an interesting and lively manner, with the use of modem demonstration means, including video equipment.

G. A. Feigin, is approaching his 70th anniversary continuing his activity as a teacher, instructor, lecturer, doctor, surgeon and generator of scientific and practical ideas.