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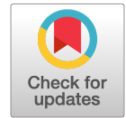

“Tandem anorexia” in dizygotic twin sisters Masha and Dasha

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ABSTRACT

The article describes a unique combination of anorexia nervosa in 15-year-old dizygotic twin sisters, Masha and Dasha, which developed synchronously and proceeded with a similar clinical picture. Within six months from the time they jointly made the decision to change their eating habits and follow a special diet, each of the sisters lost more than 25% of her body weight. However, they each still had an obsessive fear of gaining weight, preoccupation with appearance, dissatisfaction with their figures and volumes of various body parts, and also periodically disrupted their menstrual cycles. The mechanism of the development of eating disorders in each of them was analyzed and it was concluded that the principle of fierce competition between them turned out to be fundamental. The twin sisters constantly compared the results of weight loss, making sure that the other did not achieve better results. This was accompanied by emotional reactions such as resentment, irritation, complacency or gloating. It is concluded that the clinical case of “tandem anorexia” in dizygotic twin sisters Masha and Dasha allows us to confirm the fact that the formation of “pair psychopathology” (in this case, eating disorder) may be associated not so much with genetic factors, but with psychological mechanisms and should be taken into account when choosing a treatment strategy.

Keywords: anorexia nervosa; dizygotic twins; pair psychopathology.

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«Тандемная анорексия» у дизиготных сестёр-близнецов Маши и Даши

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АННОТАЦИЯ

В статье приведено уникальное сочетание нервной анорексии у 15-летних дизиготных сестёр-близнецов Маши и Даши, возникшее синхронно и протекавшее со сходной клинической картиной. За полгода от времени совместного принятия решения об изменении пищевого стереотипа и специальной диеты каждая из сестёр потеряла более 25% массы тела. У каждой сохранялись навязчивый страх располнеть, озабоченность внешним видом, недовольство фигурой и объёмом различных частей тела, а также периодически нарушался менструальный цикл. Проанализирован механизм становления расстройств пищевого поведения у каждой из них и сделан вывод о том, что основополагающим оказался принцип жёсткой конкуренции между собой. Сёстры-близнецы постоянно сравнивали результаты уменьшения массы тела, следили, чтобы другая не достигала лучших результатов. Это сопровождалось эмоциональными реакциями обиды, раздражения, самодовольства или злорадства. Сделан вывод о том, что клинический случай «тандемной анорексии» у дизиготных сестёр-близнецов Маши и Даши позволяет подтвердить тот факт, что формирование «парной психопатологии» (в данном случае расстройств пищевого поведения) может быть связано не столько с генетическими факторами, сколько с психологическими механизмами, что следует учитывать при выборе стратегии терапии.

Ключевые слова: нервная анорексия; дизиготные близнецы; парная психопатология.

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Дизиготалы игезәк кызлар Маша белән Дашадагы «тандемлы анорексия»

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Аннотация

Мәкаләдә 15 яшьлек дизиготалы игезәк кызлар Маша белән Дашада, синхрон рәвештә барлыкка килеп, охшаш клиник билгеләр белән узучы нерв анорексиясенең уникаль комбинациясе китерелә. Бергәләп туклану стереотипларын үзгәртергә, махсус диетага утырырга карар кылганнан соңгы ярты ел эчендә кызларның һәрберсе 25% тан артык авырлыгын югалткан. Һәрберсендә тазарудан курку, тышкы кыяфәтләреннән риза булмау, шулай ук вакыт-вакыт күрем циклы бозылуы күзәтелә. Һәрберсенең туклану тәртибендәге тайпылыш механизмнарын җентекләп анализлаганнан соң, боларның бөтенесенә дә кызлар арасындагы көчле конкуренция принцибы сәбәп булып тора дигән нәтиҗә ясала. Игезәк кызлар һәрвакыт бер-берсенең гәүдә авырлыкларын чагыштырып торалар, берсе икенчесеннән яхшырак нәтиҗәләргә ирешкәндә, бер-берсенә үпкәләүләр, ачулану-көнләшү кебек хәлләр дә күзәтелә. Дизиготалы игезәк кызлар Маша белән Дашада күзәтелгән әлеге «тандемлы анорексия» очрагы «парлы психопатология»нең (бу очракта туклану тәртибе тайпылышлары килеп чыгу) формалашуы генетик факторларга гына түгел, ә бәлки психологик механизмнарга да бәйле булырга мөмкинлеген күрсәтә. Моны дәвалау стратегиясен сайлаганда исәпкә алу зарур.

Төп сүзләр: нерв анорексиясе, дизиготалы игезәкләр, парлы психопатология.

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Paired psychopathology in two or more people, similar in phenomenology and synchronous in the time of manifestation, is rare, especially in cases of mental disorders that are not related to hereditary-constitutional conditions. When such a phenomenon is determined, one of the patients is assumed to be the inducer and the other the recipient, and without the former, the latter would not exist. Diagnostic difficulties arise when identical mental disorders debut simultaneously in two individuals, are similar in plot and structure, and tend to mutually influence. In such cases, tandem of patients is appropriate.

The induced mechanism of psychopathology is casuistic in nature. In the International Classification of Diseases, 10th revision (ICD-10), such disorders include only induced delusional disorder (F24), which occurs in individuals in close emotional contact. In this case, delusions are transmitted by induction and usually disappear when contact with the patient is terminated [1]. The asynchronous appearance of a mental disorder in the inducer and recipient is characteristic, and only pathological ideas can be induced, not other psychopathological phenomena. In contrast, behavioral stereotypes are formed through induction and imitation. Group suicidal behavior and self-harm cases have been described.

Eating behavior affects behavioral aspects related to deciding what food to eat, at what time, and how much of it and what is considered a standard appearance — a flawless figure [2–7]. The person's choice of food stereotype is based on the influence of "significant others" [8]. The development of eating disorders (ED), including anorexia and bulimia, is associated with the influence of the reference group of peers or close relatives [9].

In studying the problem of induction, psychological development and formation of mental disorders in mono- and dizygotic twins should be evaluated. The twin situation is a special social developmental situation that determines the formation of the personality of twins in the form of cooperation and support and of competition and confrontation [10]. Additionally, influence can be based on imitation and competition.

Several authors revealed that, in addition to external (socio-psychological) influence, genetic predisposition is critical, without which, EDs are impossible [11]. In this case, in a pair of twins, both mechanisms should be examined.

This study presents a clinical case of paired (synchronous, "tandem") development of ED in the form of anorexia nervosa in 15-year-old dizygotic twin sisters Masha and Dasha. This case was characterized by ED emerging simultaneously through the mechanisms of mutual induction and competition, when each of the sisters aimed to achieve the greatest results in reducing body weight and improving their appearance.

CLINICAL CASE OF 15-YEAR-OLDS MASHA AND DASHA

The sisters had their first thoughts about losing weight a year and a half before visiting psychiatrists. They reached their maximum body weight (Masha: 74 kg with a height of 160 cm; Dasha: 72 kg with a height of 163 cm) and purposefully began to lose weight by intermittent fasting. They associated their choice with an accidental acquaintance with this technique on the Internet. "Blogs and diets have not been studied in detail. *The initiative was joint; we do not remember who first proposed it, and no one took a leading position in this issue.* Initially, the idea was to eat whatever we wanted, but strictly at certain hours, without strong restrictions. But then we were less purposeful. It was a fleeting desire; that time, we did not act as clearly as later".

Anamnesis vitae. The girls were born from a first desired pregnancy, which proceeded uneventfully against the threat of rhesus incompatibility, and by cesarean section at 35 weeks' gestation. The children were born 2 minutes apart. At birth, Masha weighed 1,800 g, with a height of 45 cm, and Dasha weighed 1,580 g, with a height of 42 cm. They were discharged from the maternity hospital on day 8. They stayed in the neonatal pathology department for 47 days; then, they were under the supervision of neurologists for perinatal hypoxic damage to the central nervous system, hydrocephalic syndrome, and hemolytic disease of newborns according to the rhesus factor (Masha) and congenital malformation of the brain, agenesis of the corpus callosum, right hemisphere hypoplasia, perinatal hypoxic damage to the central nervous system, hydrocephalic syndrome, and hemolytic disease of newborns according to the rhesus factor (Dasha).

They grew and developed similarly; they began to hold their heads at 3–4 months, uttered their first words at 8–9 months, and began to sit at 6–8 months. Their first steps were at 1 year and phrase speech was at 2 years. Until the age of 2 years, the girls had profuse regurgitation.

To feel comfortable, the girls each needed constant eye contact with their mother; if she went into another room, they started to cry loudly, even up to vomiting. A similar reaction occurred in the presence of strangers.

They started kindergarten at age 2. Adaptation was difficult owing to the forced separation from their mother. According to Masha, her first memories from childhood were associated with kindergarten, when she realized that she and Dasha had each other and did not need anyone else. During the entire period of attending preschool, the girls communicated only with two other twins. They were bound to each other, preferred active games together, and loved to draw, paint, and assemble jigsaw puzzles.

According to their mother, in early childhood and preschool age, the twins' behavior and emotional responses did not differ significantly. *It was as if they were "copying" each other; crying and laughter in one evoked similar emotions in the other.* They were inseparable and spent any leisure time

together. The girls developed different hobbies only before entering grade 1 of secondary school.

Their mother is a school headmaster. She got married at age 33; the pregnancy was her first and desired. She is caring, attentive, overprotective, and frank, and she was inclined to discuss with the girls their actions and feelings. Relationships in the family are as open and trusting as possible; the mother provides information about the girls only after agreement with them. The father and mother have been divorced since the girls were 3 years old. According to their mother, their father was infantile, not ready for fatherhood, and insecure. He was often resentful toward the girls and had conflicts with them. He does not maintain a relationship with them and does not provide material support; however, their mother tries to create a neutral image of him to their children.

In primary school, Dasha realized that she fell short compared to Masha regarding academic performance, which made her very upset. Thanks to family conversations, she learned to recognize her individual achievements. No pronounced competition was observed between the sisters. However, during the conflicts, Masha abused the demonstration of superiority in her studies to offend Dasha, periodically making her cry. They communicated with an outsider only by mutual consent.

At age 5–7, the girls started attending dancing classes together. Over time, they stopped liking it. In a conversation with their mother, they admitted that they could not stand criticism and competition with other children (but not with each other). There were attempts to stay in a children's camp and sanatorium. However, they felt confused, did not prove themselves when surrounded by other children, and had difficulty making close contact with their peers. This may be due to a strong attachment to their mother. In childhood, fears of getting lost and being alone prevailed. They were afraid of the dark and fell asleep only in the presence of their mother.

At age 7, they entered grade 1 together at school where their mother worked as a headmaster. Thus, adaptation was easier. By grade 2, Masha studied mostly with excellent marks, whereas Dasha found her studies more difficult. At this time, the girls first felt the difference between them, and the need to feel like separate individuals arose. According to Masha, her mother had always addressed them as "Masha–Dasha" and admonished to both of them at once. From that time, the family attempted to emphasize the individual achievements and successes of the sisters separately to avoid pronounced competition in their studies.

Until grade 5, Masha studied mainly with good and excellent marks. In grade 4, she had pneumonia and was hospitalized for a long time; she was very worried that she would fall behind in her studies. After resuming school, she aimed to become an excellent student again — a student of the year — and strived to get on the honor board. For this purpose, she clarified the criteria and worked conscientiously on each of them ("If I have my mind on something, then in any case I will achieve it"). She accomplished what she had planned; from grades 5 to 7, she was an excellent student, was awarded for her efforts, "tried to hold a high bar", and regularly took part in academic contests and competitions. She was elected "class leader". She had a high level of responsibility, although she was not more active than her classmates and did not like to take initiative. According to her mother, "She could hardly be called an ideological inspirer and a leader; she was more successful in her decency and diligence".

At the beginning of the first quarter of grade 7, Masha was bullied by her classmates. She associated this with envy of her academic success and her mother's position at school. According to her, no one joked about her excess weight then, although Dasha said that her classmates called her sister a sheep, cow, and fat board; despite her similar plumpness, the pupils were afraid of her, because she could always "give rebuff". Bullying manifested when her classmates posted an unsuccessful photo of Masha on the group chat cover. Some placed this photo on their personal profile and began to openly mock her. The conversation with the headmaster did not change their behavior, and the episodes of bullying continued. Classmates chased the twins after school; they ran after them with ridicule and rang their apartment bell, knocked, and ran away.

According to their mother, Masha responded extremely distressingly, prompting her to visit a psychologist for a year. Conversely, Dasha demonstrated independence and fearlessness; hence, she was not annoyed. Since grade 8, the problem has been leveled, and communication with classmates improved. Despite the friendlier atmosphere in the class, Masha believed that many pupils continued to take advantage of her gentleness, responsiveness, and inability to refuse requests, for example, letting them copy her work or do something at the expense of her time. The similar behavior of a classmate for whom she had sympathy became painful for her. In grade 8, Masha "burned out" regarding the idea of being an excellent student ("I achieved my goal, and then I lost the sense, I felt empty"). She started getting good marks and "was no longer preoccupied with her academic performance".

The girls' interests and hobbies were similar. Masha was interested in the field of beauty, books about animals, and children's cartoons and was affectious to her toys and took them with her on trips. Dasha was prone to a variety of creativity; she did mosaics and painted. They still did not communicate closely with their peers and spent their free time with their mother. At the time of contacting psychiatrists, they were studying grade 9 in a secondary school. Their mother moved to the position of headmaster at another school; the girls were worried about it at first, but later considered it positive for them, since people around them could no longer associate their merits with their mother's position.

The sisters differed and still differ in character. Masha is quite soft and loves affection and tactile contact. She is sensitive, emotionally vulnerable, and anxious. She is empathetic and caring. She experiences pronounced discomfort in conflict situations and tries to reconcile everyone; she is called a "diplomat" in the family and maintains contact with all relatives. Moreover, she is practical and pragmatic. She is pedantic, prefers to organize life and the space around herself, and follows rules. According to their mother, "It was easier to give instructions to her rather than to her sister, because you knew that everything would be done well". She can set goals and achieve them, but needs approval, recognition, and encouragement. She is cogitative, with a high ability and need for introspection. She is prone to moralization, often takes a judgmental position, and points out to people their shortcomings. According to her mother, "She is sequacious at times; she can easily become addicted".

In contrast, according to her mother, Dasha is self-sufficient, self-centered, and irreconcilable and "the vector of attention is directed toward herself". She was always inclined to admire herself; was proud; had a special appearance, facial expressions, and gestures; and demonstrated her superiority. Her self-esteem before the eating problems occurred was "overly high". She has the makings of a leader; she knows how to lead, "boss around", and organize classmates and needs public recognition. She does not show much affection or tenderness. "She is like a hedgehog; she rarely allows herself to be hugged or kissed". At the moment, she demonstrates great independence in family relationships, communicates with relatives formally, and stays apart during joint walks. According to her mother, she is relatively childish and irresponsible in everyday life.

From early childhood, the girls were inseparable, preferring friendship with each other and shared leisure time to close relationships with peers. They rejoiced at each other's successes, empathized, and exchanged gifts and surprises.

According to Masha, she and Dasha are "completely different people", but cannot exist without each other. "I am a softer person, first of all; my relatives communicate with me. Dasha is unkind and uncommunicative. She has a different attitude toward people, but I always accepted her and tried not to engage in moralizing. I always smooth out conflicts; they never lasted more than half an hour. With age, I became more diligent, so I was praised more; because of this, Dasha believed that they loved me more. But my mother emphasized our success in various areas and separated us, so *there were no problems with competition before the nutrition situation*".

According to their mother, the leading positions in the girls' relationships changed with age. As a child, Masha was in the lead, since she was always given more responsibility. During elementary school, Dasha "found weak points"; she periodically manipulated Masha and kept her submissive. After family conversations, relations leveled out. *Throughout the nutritional problems, Masha takes a leading role. According to her mother, "Dasha would have given up long ago, because she always liked herself, but now she is in a sequacious position".* At the moment, the girls have a pronounced competition related to nutrition and weight control. They agree that this has become the main problem of mistrust and hostility toward each other.

Medical case history. Dissatisfaction with appearance and excess weight first arose in the girls at age 13 against puberty; however, they did not make active attempts to change anything. Dissatisfaction was experienced when trying on clothes in a store, when the usual size did not correspond to the desired one. They developed their own style of clothing and began to wear wide black clothes, preferring them to pink dresses and feminine outfits.

According to Dasha, she had never had any criticism of her appearance before; she considered herself the most fashionable and did not notice ridicule. The first thoughts about body correction appeared a year and a half before the first attempts to change the food stereotype. She began to consider Kim Kardashian as her ideal and wanted to have an hourglass shape with a narrow waist and wide hips. At that time, she was not focused on numbers (weight) and was happy with her hips; she just wanted to power up her muscles a little. However, over time, she began to think that her legs were too big and her stomach was not flat enough.

During the school holidays before entering grade 9 (6 months before contacting psychiatrists), the sisters jointly decided that they needed to lose weight, get rid of excess weight, and achieve the "dream body". By that time, Masha weighed 74 kg, with a height of 160 cm, and Dasha weighed 72 kg, with a height of 163 cm. They decided to try intermittent fasting. According to Dasha, Masha showed more initiative and perseverance and was initially tougher and more categorical about this problem. They made plans to achieve a body weight of 50 kg by September 1 (i.e., lose 22–24 kg).

During the summer holidays, they tried to exclude sweets and starchy foods from the diet; they ate cottage cheese and porridge with milk at about 11 am. During the day, they could eat fruit, and at about 5 pm, they had a light "dinner". Periodically, they afforded themselves sweets ("so as not to break down"). During the period when they were vacationing in the village, their grandparents openly showed dissatisfaction with their diet. In this regard, the girls stopped eating together with their relatives and concealed when they needed to eat. They periodically hid and threw away food. "At that time, there were no constant anxious thoughts or discomfort associated with nutrition in the head".

Dasha recalls that the first time a pronounced feeling of guilt after eating something arose in July, when she and her sister were baking a cake and they ate a significant part of it. After this, Dasha scolded herself for a long time and began to introduce additional strict restrictions on her diet. She started tracking her body weight more regularly and *compared the results with her sister's* ("I weighed myself in

the morning, and also after every meal, snack, and glass of water, I became addicted"). In September, after a 3-day starvation, they decided to hide the scales. Since then, changes have been assessed only visually in the mirror, and on weekends, in the morning after going to the toilet, they measured their waist on an empty stomach. After eating, they always inspected themselves visually, and used tape only in cases where they feel that they have overeaten. In addition, sometimes they drink a double dose of a laxative to achieve greater effectiveness. They deny taking other drugs that affect body weight.

Dasha described her competition with her sister in the matter of weight loss saying, *"Masha's commitment to the new eating stereotype is greater; for her, it reaches the fanaticism. Now she's the one who's watching everything; she's the one who measures, weighs, and counts everything".* At the same time, Masha strives to weigh less because she is shorter. A big role is played by the difference in the numbers on the scales that appears after the interval between weighing. Questions arose as to why one lost 4 kg and the other only 2 kg, and the conclusion was drawn that one was weaker in character and the other was stronger.

Once, when Dasha did not want to eat the amount of meat they had set themselves, deciding to replace it with sweets, her sister replied, "Please eat everything, otherwise I will be hysterical". At such moments, when *one of the sisters ate less, the intensity of competition reached its maximum*. According to Dasha, Masha was more jealous and irritated when her sister could sometimes eat less than she should and gloated when Dasha overate. Moreover, in similar situations, Dasha felt dissatisfied with Masha's behavior ("I get annoyed when I have already eaten a piece of cheese, but my sister hasn't yet, at these moments I am more irritated with her than with myself").

Severe nutrition problems worsened in early August when they seemed to be eating more than before. Competition on who eats what amount of food has intensified. Up to this point, they could only exclude sweets and starchy foods, but periodically allowed themselves a candy, chocolate, and rolls. At first, their mother supported them so that they would not be disappointed in their expectations. However, she tried to soften their harsh attitude toward food and bought "healthy foods", supported them in working on themselves, and protected them from the criticism of their grandparents. However, she soon doubted the correctness of her attitude to the problem when she saw that the *girls were becoming obsessed with the diet and going beyond all reasonable boundaries*. In August, they became more secretive and stopped allowing their mother to watch them change clothes and forbade her to touch them.

The sisters planned to complete the weight loss period by the end of the summer, but closer to September, their goals (reduce body weight to 50 kg) were not achieved. Then, a new goal to reduce the weight "at least" to 55 kg arose; however, this result was not achieved by the beginning of the school year. The sisters were extremely disappointed and decided to tighten their diet. They started to monitor changes in body weight more closely and weighed themselves daily in the morning, on an empty stomach, completely naked, and after bowel evacuation. *The readings on the scales were always compared.*

At the beginning of September, owing to "poor results", the girls decided to stop eating food completely and practically stopped drinking water. At first, the dietary restrictions were easy, and they had no appetite, but later, they began to look at everything with hungry eyes ("We would like to eat a sofa"); it became difficult to climb the stairs, and when they got out of bed, they felt very dizzy and had a headache. The negative manifestations of fasting reached their maximum severity on the night after day 3 of their strict diet. Masha felt very nauseous and vomited eight times; her blood pressure dropped to 108/60 mmHg, and her pulse increased to 130 per minute. The girls feared for their lives and were afraid that their bodies would no longer be able to process food.

Their grandmother, who was with them, called an ambulance team. The girls were provided with first aid measures at home. After the recovery, the sisters found something positive in what had happened, that is, the body weight decreased to 56 kg in Masha and 56 kg 200 g in Dasha. Then, there was a recovery period, during which the sisters strayed from strict prohibitions and allowed themselves sweets and starchy food at certain times of the day. They sometimes began to have dinner later than 6 pm and added more fruits, vegetables, and fermented milk products to their diet.

At their mother's request, they began to discuss with her the problem of diet and dietary restrictions, focusing on religious and moral positions. At that time, their mother believed that they reacted to this quite consciously and critically. However, their attitude soon changed, and they again began to fear the return of increased weight.

A week after the incident, they went to the therapist with complaints about the lack of regular bowel movements and menstrual irregularities. At the appointment, it turned out that their body weight had again increased by several kilograms. *Dasha reacted especially vehemently to the fact that they had a difference of 1 kg ("she became fixated on it").* Their mother managed to calm her down by saying that she was taller. After that, for some time, the sisters began to eat normally, did not particularly watch each other, and did not get angry or offended at each other.

Their mother supported her daughters in their desire to look slim; hence, she bought them gym memberships. The girls began to attend classes three times a week, while "torturing themselves with physical activity", and, without noting a clear result on the scales, they concluded that body weight should be adjusted only by diet.

At the "family council" it was decided to remove the scales from the house. However, instead of daily weighing, regular

measurements of body parts began using a measuring tape (circumference of shoulders, hips, and waist). The girls claimed that measuring their bodies calmed them down, but only if there was a decrease in the indicators. If the size did not decrease, they became very upset. After some time, they decided to weigh themselves, and the result was extremely disappointing as they again gained 1.5–2 kg. Masha said that this upset her, but not much, and Dasha became extremely aggressive ("I then tried to support her, explain to her about the gym and drinking a lot of water, because otherwise she could go crazy").

During the first half of October, the girls allowed themselves a relatively large amount of food; their mother tried to take them to restaurants and prepared a variety of foods. However, after some time, dissatisfaction with their own weight arose again; "they became overwhelmed", and they once again decided to change radically their nutrition. They excluded sweets, reduced food intake, and gave up fatty, salty, and starchy foods. They divided the meal into two portions: breakfast upon waking (cottage cheese, natural yogurt without additives, tea without sugar, two slices of apple/pear or four tangerines) and dinner at 5 pm (light soup, chicken breast without butter, a slice of cucumber or tomato). *Portions had to be weighed and divided equally* with "not a gram more, not a gram less". There was no specific figure, but the main aspect was that the sisters' diets were equal "to the crumbs".

Their mother noted that Masha took a tougher position and did not allow herself to retreat and that Dasha was prone to connivance, was resentful at Masha, and blamed herself for periodical overeating, showed aggression, did not want to see anyone, and refused to share family leisure time.

Since the end of October, the girls' mental state deteriorated significantly; depression and confusion appeared, and their mood decreased. Conflicts began to arise between the sisters. Once, when Masha received zero points in the academic contest and was very upset, Dasha did not support her and did not show sympathy. During that period, Masha's "understanding about family began to crumble"; she began to think that "If the closest person (sister) did this, then what can be expected from strangers?" These numerous questions and reluctance to live increased, and her mood sharply decreased. This was also noted by their mother, who saw that her daughter had become depressed, been "constantly feeling down", and began to get stuck on her experiences.

Furthermore, she began to demonstrate signs of aggression that was abnormal to her, amid constant talk about possible weight gain and the fear of not returning to have the desired shape. Intolerance to everything appeared; previously, she was always peaceful and felt discomfort when she was present during a conflict, but now, she began to induce conflicts. She was often depressed and admitted that she did not see the meaning of life and did not trust people.

Dasha began to experience anxiety due to obsessive thoughts and rituals associated with eating. "I allow myself to eat one piece of candy. During the process, painful thoughts arise, that if I don't eat three pieces, I won't become an academic contest medalist, I won't earn good luck, or something bad will happen". Such episodes occurred frequently; obsessive thoughts could replace each other and lead to overeating. Then, anxiety, ideas of self-deprecation and self-blame, and self-punishment with additional restrictions and physical activity arose. "I remembered that in childhood, there were similar obsessions that were not related to nutrition like if you don't clap three times or don't stand for exactly a minute, something bad will happen".

At the end of November (i.e., 6 months after the appearance of problems with nutrition), on the urgent recommendation of their mother, the girls turned to us for advice about their mental state. During the consultation, which took place both when the girls were together and separately, Masha complained of a loss of reason to live, the inability to experience joy and pleasure, devaluation of herself, lack of self-love, fears, insomnia, anxiety, and problems with attitude toward food. Dasha complained of an irresistible desire to eat something, overeating followed by feelings of guilt, "punishing herself" with training, a tougher regimen, dependence on numbers on the scales and appearance, and loss of joy in life. *The complaints of the sisters differed; one of them had complaints about problems related to nutrition and self-esteem, whereas the issue of ED was declared last by the other sister.* Moreover, during the consultation, tension was felt in their relationship.

Mental status (Masha). Outwardly, she looks neat and tidy. The image is unusual, dressed in a school uniform, but with additional decorations and details. During the conversation, she periodically tidied her hair and clothes, straightened her posture, and tried to make a favorable impression. She was open to dialogue and polite, demonstrated confidence, and willingly shared her experiences. She maintained eye contact, but periodically, during the process of reasoning, she fixed her gaze on surrounding objects and lowered her eyes when subjectively unpleasant topics were mentioned. She concentrated attention in sufficient degree.

Facial expressions are mobile, lively, and expressive. She periodically gestured according to the theme of the story. Her voice was sufficiently modulated, with some intonation saturation. Her speech was at a normal pace and grammatically correct. The formulation of thoughts was orthographical and replete with epithets, and she used literary terms. Her level of intelligence is quite high. During the conversation, she took the initiative in storytelling, was reasonable, and was inclined to analyze events rather than formally report facts. She talked a lot about her personality and characterized herself as a responsible, honest person, but *often turned to comparing her characteristics with those of her sister*. She reported that she is an anxious person, constantly stressing herself out. She believes that her anxiety

often increases to the point of feeling shortness of breath, as if her heart would leap out of her chest; however, she did not show this during the conversation.

Regarding her attitude to food, she reports that she was always selective in food and liked to cook different dishes and the aesthetics of eating and serving style. She was interested in trying and experimenting. In the last 6 months, it has ceased to bring pleasure; she lost interest in eating and everything else. She openly shared problems associated with ED, expressed the supposed causes of her behavior, and asked questions about the connection with her emotional state ("I cannot say no. I had a relationship with a boy; it is always important for me to receive approval and gratitude for my actions. And I helped him for no special reason. Questions began to arise, if people can perceive and love me for no special reason? I didn't want him to look at me because my arm was thicker than his leg. I started to think if the lack of reciprocal love and attention was related to my weight. But my sister and I lost weight, and nothing happened; what's wrong with me again?").

She concluded that problems with the emotional state potentiate EDs and believed that they may be primary. She denied maintaining a blog, food diary, or community on social networks. She reported that her mother taught her "digital hygiene" and did not allow her to post photographs or personal data on the Internet, arguing that "The trace of what is published remains for life and may have a negative impact in the future".

She detailed conflicts with her sister and confirmed that before the current problems they had had a warm, harmonious relationship without rivalry. *"Now we have pronounced competition, although initially we had different goals, ideas about beauty and ideal weight, two different dreams".* Having achieved a certain weight, Dasha forgot about her ideal figure and was simply fixated on "*having less weight than me*". For her, the indicator on the scale is crucial; she does not compare shapes, physique, weight, and height. "*At times, the competition between us is fierce and aggressive*, especially when my sister allows herself more than I allow myself".

When asked what problem she wants to deal with first, she answered, "I think that I haven't finally arrived at the ideal figure; my weight and my body don't completely suit me, I want to correct it. When the goal is achieved, I want to eat well without gaining weight, so that it is fixed and stays at the same level; fluctuations of 1–2 kg are not scary. But it is better to go down. I want to change my attitude toward food, eat fully and calmly, allow myself something tasty, but only on the condition that my weight does not change".

She was interested in the prescribed treatment (sertraline, 100 mg/day)and expressed concerns after reading about side effects associated with weight gain. Her thinking was harmonious and purposeful, without pathological manifestations. No evidence of productive symptoms was identified. Her sleep was restless due to nightmares.

Experimental psychological examination (Masha). The Leonhard–Shmishek questionnaire showed high values: 21 points on the emotive scale and 21 points on the cyclothymic scale. The Beck Depression Inventory showed 25 points, with cognitive–affective manifestations of 16 points and somatic manifestations of 9 points, indicating a moderate depressive episode. According to the abbreviated multifactor personality questionnaire (Fig. 1), Masha had a high level of anxiety, fixation on her feelings, and a tendency to overcontrol.

Somatic status (Masha). Asthenic syndrome (increased fatigue, decreased tolerance to physical activity; hyperesthesia with irritability; emotional lability; sleep disturbance associated with regular nightmares; daytime sleepiness; difficulty focusing; autonomic symptoms such as headache, dizziness, rapid heartbeat, and extremity coldness). Her menstrual cycle was normal. There were no voluntary acts of defecation, only after taking a laxative once a week. *Anthropometry:* height, 162 cm; body weight, 48 kg; and body mass index, 18.29 kg/m2 (underweight). Complete blood count showed hemoglobin of 147 g/l and hematocrit of 46%. Biochemical blood test showed total protein of 83 g/l.

Mental status (Dasha). She appeared well-groomed, dressed in a classic school style. She was initially somewhat tense, wary, and reluctant to provide information about herself; however, during the conversation, she relaxed, became more frank, gave detailed answers, and spontaneously provided information about herself. She maintained full visual contact, was not distracted, and concentrated attention sufficiently.

Her facial expressions were fluid; however, there was an impression that Dasha was trying to restrain her emotions. She showed no active gesticulation and sat almost motionless. Her voice modulation was average, with frequent negative intonation. Her speech was leisurely, with an extensive vocabulary and correct grammatical structure. Her intellectual level corresponded to age.

She was most willing to describe the characteristics of her nature and analyze changes against the problems with nutrition ("I used to be confident, firm, willful, satisfied with myself. I was often happy, having fun, and was energetic"). After guiding questions about the paradoxical deterioration of her condition and self-esteem against the desire to fulfill the dream of becoming better and happier, she said, "Indeed, now I am more closed, unemotional, and I practically do not experience pleasure from anything. Even though I weighed 72 kg then, I was much happier than now, and considered myself a person with an optimistic outlook on life". She said that at that moment, she has moved away from the primary ideal body image and could not determine the exact motive for further weight loss, with a pronounced fear of gaining weight being the leading one. She worried about the lack of attention from the opposite sex ("I lost weight, changed my appearance, and solved my acne problem. I reach heights, I can reflect. But there is no attention from the boys; I'm just a friend, a helper for them"). *She was burdened by conflicts*

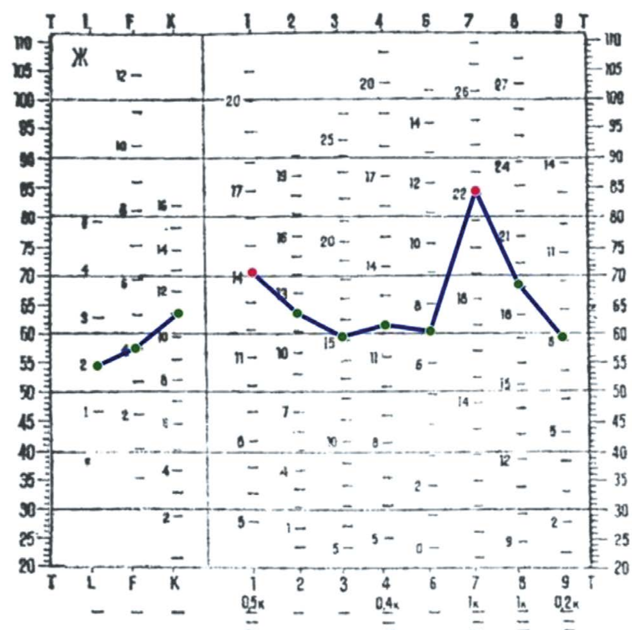

Fig. 1. Data from the abbreviated multifactor personality research questionnaire (Masha).
Рис. 1. Данные сокращённого многофакторного опросника исследования личности (Маша).

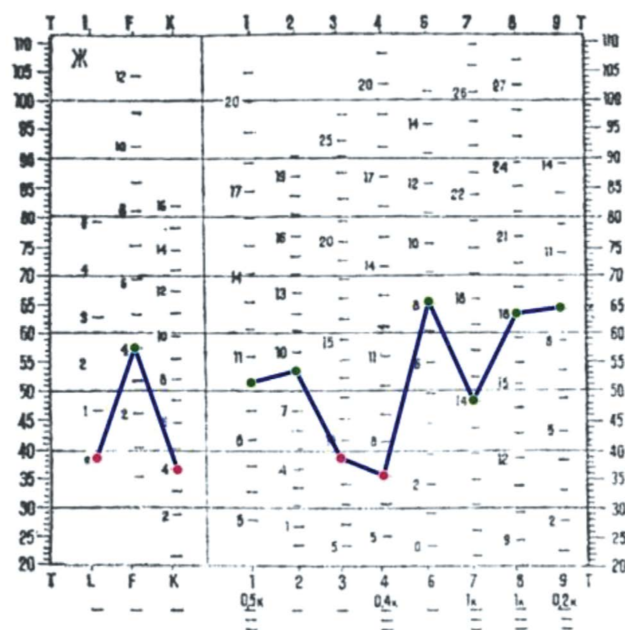

Fig. 2. Data from the abbreviated multifactor personality research questionnaire (Dasha).
Рис. 2. Данные сокращённого многофакторного опросника исследования личности (Даша).

with her sister and described episodes of current quarrels and provided details about competition.

She showed initiative in repeated conversation. She began to listen to suggestions that weight had no direct association with her personality, successes, and achievements. She reported that she tries to focus less on eating and worries about breakdowns, but became more critical of the reaction to overeating ("I don't want to condemn myself or love myself less simply because I ate something extra"). The emotional background was predominantly reduced. Her thinking was harmonious, productive, and flexible. No hallucinatory delusional symptoms were identified. She had problems falling asleep and experienced nightmares. Appetite was unstable with periodic increases.

Experimental psychological examination (Dasha). The Leonhard–Shmishek questionnaire showed high values: 21 points on the dysthymia scale. The Beck Depression Inventory showed 22 points (cognitive–affective manifestations, 17 points; somatic, 5 points), indicating a moderate depressive episode. According to the brief multifactor personality questionnaire (Fig. 2), she had a tendency to resentment and distrust against moderately low mood.

Somatic status (Dasha). Asthenic syndrome (increased fatigue; decreased tolerance to physical activity; hyperesthesia with irritability; emotional lability; sleep disturbance associated with regular nightmares; daytime sleepiness; difficulty concentrating; vegetative symptoms such as sweating, dizziness, and vision dimout). Additionally, she experienced regular discomfort in the stomach, saying, "As if gastric juice is corroding everything from the inside". Her menstrual cycle was normal. She had constipation; there were no voluntary acts of defecation, only after taking a laxative once a week. *Anthropometry* shows height of 165 cm, body weight of 52 kg, and body mass index of 19.1 kg/m^2. Complete blood count showed hemoglobin at 138 g/l and hematocrit at 43%. Biochemical blood test revealed total protein of 83 g/l.

DISCUSSION

When analyzing a paired (tandem) case of ED (anorexia) in 15-year-old twin sisters Masha and Dasha, it should be recognized as a rare variant of this mental disorder. "Tandem" psychopathology means interconnected clinical manifestations of identical mental disorders that appeared synchronously in people related by a strong emotional bond. In the present case, the sisters grew and developed together; their EDs arose at the same time and were maintained because of the competition of girls based on weight loss achievements.

An appeal to psychiatrists was initiated by the girls' mother, since the weight loss in each of them over a 6-month period was >25%, which is considered a significant diagnostic criterion for anorexia nervosa (F50.0 according to ICD-10 or 6B80 according to ICD-11). Additionally, the twin sisters continued to have an obsessive fear of gaining weight, and they were preoccupied with their own appearance, dissatisfied with the figure and volume of various body parts. Moreover, their menstrual cycle was slightly disrupted. An identical clinical presentation of mental disorders and a similarity in the dynamics of clinical phenomena were noted.

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A study has proven a stable relationship between twins compared to other people, particularly regarding the same preferences and tastes [12]. Masha and Dasha, with some peculiarities of ideological attitudes and characterological qualities, had generally similar ideas about the nutritional system, standard body weight, and ideal appearance.

Studies on the occurrence of anorexia nervosa in twins have shown that concordance for this disorder was high in monozygotic twins and low in dizygotic twins (9/16 and 1/14, respectively) [13]. Kipman [14] and Bozkurt [15] revealed a similar level of concordance with 44% in monozygotic and 12.5% in dizygotic twins.

Considerable scientific studies have focused on the biological basis of EDs through familial, twin, and molecular genetic studies [16]. Family studies have shown that both anorexia and bulimia nervosa have a strong familial pattern and that familial etiological factors are common to both disorders [17].

Twin studies focus on broader phenotypes or subthreshold EDs, and studies have consistently identified a moderate to significant role for heritable factors. However, numerous genetic association studies found no consistent association between the candidate gene and anorexia/bulimia [16]. According to Kibitova and Mazo [18], attempts to identify biological markers of risk and prognosis of ED represent a "vicious circle" due to the imperfection of modern psychiatric classifications and inability to differentiate different types of mental pathology and draw a clear boundary between normality and pathology.

According to Skugarevsky [19], the main factors of a predisposition to EDs is associated with individual-specific environmental factors and environmental influences common to the pair. This was confirmed in the studies by Maloney [20] and Zohar [21]. According to Meshkova [22], environmental family risk factors are nonspecific and accompany EDs and other disorders, and there is probably a hereditary predisposition that turns into a pathological phenotype under a certain set of circumstances.

Some studies draw attention to the fact that a significant factor in the formation of EDs may be the relationship between mother and daughters [23]. In the case of Masha and Dasha, their mother did not have a "worship" of food; however, there were periods when figure and appearance became very significant for perception, and then she could limit herself in food and purposefully lose weight. Moreover, there was a kind and open relationship between the mother and her daughters.

In the analyzed case of Masha and Dasha, attention was drawn to the fact that the formation of EDs for each of them was based on fierce competition among themselves. The twin sisters constantly compared the results of weight loss, making sure that the other did not achieve better results. This was accompanied by emotional reactions of resentment, irritation, complacency, and gloating.

It can be assumed that if the sisters were separated, EDs could stop in each of them, since the motive of competition would disappear. The inability to separate girls may become a barrier to the treatment of anorexia, although it can be assumed that competition mechanisms may also be involved in the issue of treatment efficiency [24].

It should be recognized that anorexia nervosa is a unique ("reference") mental and/or behavioral disorder wherein the mechanisms of competition, imitation, and emotional contagion are found to be underlying. This can be tenuously compared with the imitative behavior of patients within self-harm or the use of psychoactive substances with detrimental consequences; however, with self-harm and alcoholism (drug addiction), the "contagion" effect may be present, but competition may be absent [25].

The presented clinical case of "tandem" anorexia in dizygotic twin sisters Masha and Dasha confirms that the formation of "paired psychopathology" (in this case, ED) may be associated with psychological mechanisms, which should be examined when choosing a treatment strategy. In this regard, how mental disorders differ from behavioral disorders and what ED can be classified are crucial.

Behavioral disorders are believed to be caused by psychological mechanisms and differ only quantitatively from behavioral deviations [9]. They are based on impairment of socialization. A different view is taken by authors who argue that many behavioral disorders are more heritable than conditions considered as mental illnesses. The long-lasting debate about psychopathy (personality disorders) as constitutional anomalies ("nuclear psychopathy" according to Yudin) [26] or as "the embodiment of the psychopathic model of society" [27] indicated that many pathological patterns of behavior at present can be recognized as the norm.

From the perspective of the formation of stereotypes of eating behavior and diagnosis of anorexia nervosa, this study explores the boundaries of normative attitudes toward own appearance and the process of bodybuilding. Reducing body weight and modifying the figure to model standards should be considered as a trigger for ED. In this regard, the tendency to lose weight can become an extremely valuable idea that determines a lifestyle.

Such ideological attitudes at a certain stage may not differ from delusional ones and are characterized by a lack of criticality even in life-threatening conditions. Pathological stereotypes of eating behavior are more easily formed in peer groups and during joint socialization in the family. Thus, the development of twins should be recognized as a situation of increased risk regarding the development and maintenance of behavioral pathology, in particular ED.

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