CASE STUDY

DEVELOPMENT OF ANOREXIA NERVOSA IN A FEMALE ADOLESCENT IN A DYSFUNCTIONAL FAMILY ENVIRONMENT WITH IMPAIRED ATTACHMENT AND EMOTIONAL REGULATION: A CASE REPORT

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ABSTRACT

A 17-year-old female patient was admitted to the psychoneurological department of Kyiv Clinical Railway Hospital No. 1, due to deterioration of her mental state, a significant decrease in body weight, and no effect of outpatient treatment.

The complex treatment program, directed on the correction of all multidimensional disorders with the preliminary psychodiagnostics examination of the patient and her parents according to the FACES-III, DERS, which were monitored in dynamics during the 3,6,9 and 12 months of treatment, was applied. The patient's parents were additionally assessed by TAS, HADS, and the CQLS.

We noted that the functioning of the family as a whole influenced the emotional regulation of each of its members; in turn, the emotional regulation of the parents had a direct influence on the patient's emotional regulation, and the patient's emotional regulation influenced changes body weight.

The patient's personal psychotherapy and ABFT allowed us to decrease the gap in the attachment relationship between parents and patient and create a safe emotional base for reducing the stress of the relationship with parents at home, which was confirmed by positive dynamics of FACES-III, decrease in difficulties of emotional regulation on DERS and restoration of the patient's normal weight.

KEY WORDS: anorexia nervosa, dysfunctional family, attachment, emotional regulation

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INTRODUCTION

During the second half of the 20th century, the prevalence of anorexia nervosa increased dramatically and has remained relatively stable over the past 20 years [1]. Anorexia nervosa (AN) occurs among different age groups, but the average age of onset is most often observed in adolescence. According to numerous studies, adolescents are the most at-risk group, and this is due to several different environmental, social, psychological, and biological factors [2-5].

Current models of AN tend to focus on the cognitive-behavioral features of patients from the here-and-now perspective and do not explain important factors of impaired emotional regulation, impaired interpersonal functioning, self-concept, and mentalization. Specifically, these factors, which play an important role in the development and maintenance of AN, are well defined within the attachment theory [6]. According to this theory (J. Bowlby, 1969) an emotionally warm, close, stable, long-term relationship with the mother, which brings joy and pleasure to the mother and child, is essential for the maintenance of the mental health of children (in childhood and early infancy).

Secure attachment has an important influence on how adolescents perceive and cope with complex transformations during adolescence. It is crucial for adolescents in adjusting to physical changes, create their own identity, or set goals for the future, and is thus an important buffer against psychological risks [6].

Modern neuroimaging methods confirm the position of the attachment theory concerning the pathogenesis of AN, which allows applying new effective therapeutic interventions [7]. W.Greenough and J.Black back in 1992 first described a model of "experience-dependent synaptogenesis" [8] of the brain when a spike in metabolic activity occurs.

A. Shore conceptualized the psychobiological interaction between caregiver and infant as "direct communication between the caregiver's right brain and the infant's right brain," in which the caregiver's brain serves as a template for the development of the infant's neural circuits [9]. He argued that abusive, neglectful, and chronic "unhappy" states lead to overstretched synapses in the right orbitofrontal cortex, resulting in the impaired ability of the infant to modulate and regulate emotions in response to stress.

Research demonstrates that, as a child grows up, a caring environment can have protective and neurotrophic effects on AN-related brain regions. For example, love received primarily from the mother [10] is an indicator

of secure attachment and may be an important protective factor against AN during adolescent brain development. Conversely, parental neglect in early childhood can cause specific changes in brain trophic that become the basis for the development of AN as early as adolescence [11]. It has been suggested that the re-activation of parental care can alter the functioning of brain regions that condition the presence of resistant forms of AN.

Such reactivation of attachment-related brain circuits can be achieved through individual and family psychotherapy or other family psychotherapeutic approaches aimed at correcting emotional experiences [12]. Experience with attachment models in psychotherapeutic relationships suggests that it is possible to influence attachment-related brain circuitry in patients with AN and prevent the occurrence of eating disorders in children and adolescents in the future.

We aimed to present a clinical case that demonstrates the development of AN in a female adolescent in a dysfunctional family environment with impaired attachment and emotional regulation, as well as the use of an effective anorexia nervosa therapy approach.

CASE REPORT

Patient N., a 17-year-old graduate schoolgirl, was admitted to the psychoneurological department of the Kyiv Railway Clinical Hospital No. 1 due to deterioration of her mental condition, a significant decrease in body weight, and no effect of outpatient treatment.

OBJECTIVELY

At the time of the examination the general condition was of moderate severity: height 170 cm, weight 33 kg, BMI 11.4. The skin was pale and dry, turgor and skin elasticity were reduced. Cardiovascular system: sinus bradyarrhythmia, heart rate 37-43 per min., myocardial changes. The tongue was covered with white plaque. The abdomen was painless. The liver and spleen were enlarged. Ultrasound: signs of hypoplasia of the thyroid gland; signs of gallbladder deformity, biliary dyskinesia, colitis.

MENTAL STATUS

At the examination, consciousness was clear and the contact was productive. The patient was oriented comprehensively correctly, fixated on her sensations, tearful, anxious. The perception was normal, interoceptive sensations enhanced. Memory and intellect were unchanged. Concentration of attention was significantly decreased. Thinking and speech were inhibited, and judgments were pessimistic with overestimation of dysmorphic ideas. The general background of mood was lowered with a pronounced anxious component. Conscious suicidal tendencies were not revealed. Her higher senses were sufficiently developed, whereas her lower senses were significantly impaired. The patient was asthenic and her active attention was easily exhausted. She was cognitively critical, and emotionally uncritical (if she was told that her body weight was too low and needed to be increased, she cried and reacted aggressively).

LIFE STORY

During the pregnancy mother worked, though the pregnancy was complicated by toxemia. Childbirth delivery occured in time, and without complications. Breastfeeding had to be interrupted at the age of 2 months when the mother went to work. Patient N. is 5 years younger than her sister. Her early development had no peculiarities, she was physically and mentally up to par with her peers, and often had colds. She was brought up by a nanny who lived with the family all the time, then she attended a kindergarten. She started to go to school at the age of 6, but she «didn't succeed» in getting high marks, because she was constantly worried at the lessons. She was emotionally conditioned with cognitive impairment (difficulty concentrating and impaired recall due to extreme anxiety).

From early childhood she attended extracurricular activities, and completed music and art schools with high grades, but she is not involved in drawing and music now. Also, the patient won the first place in ballroom dancing competitions but stopped dancing because of her best friend's success at dancing. Because of this competitive relationship, she stopped attending her tennis clases, explaining that she "had been forced to stop practicing due to illness". The patient was unhappy as she felt all her friends were trying to be like her. She had had best friend for 3 years who was the leader in their relationship (determined what they would do, where they would go, etc.). The friendship ended at the friend's initiative when the patient paid attention to a classmate (helped her pick out an outfit for a contest). At school there began bullying, initiated by her best friend: almost all the patient's classmates turned their backs on her, and she was harassed and humiliated on occasion.

FAMILY STORY

Lives with her parents and older sister. The mother is a 43 year old accountant, and the father is a 43 year old doctor. Relationships with the mother and the sister are trustworthy and warm. The mother is attentive and caring, but communication with the mother is often "not enough because the mother works a lot". The relationship between the parents have always been tense. The patient describes her father as strict, critical, demanding, always dissatisfied with the progress of her daughters, and constantly demanding more in everything. Relationships with the father are cold, devoid of love and care. The father often provoked conflicts with the mother, the patient, and the sister, emotionally abusing everyone. The mother is always trying to protect her daughters in front of the father. The elder sister is overweight. The patient often witnessed the father and sister's quarrels. He forbade her eating too much. The sister often shared with the patient her emotional state after the

arguments with her father. The patient often woke up at night during her childhood because of her sister's crying. The father forbade crying in front of him and forbade any expression of anger and aggression in his direction from both sisters. The patient never complained or cried when in physical pain.

PAST MEDICAL HISTORY

The patient considered herself being ill for about 3 years, when, as a result of bullying at school, she began to eat more food and gain weight. Then, for the first time, she began to lose weight by restricting her diet,removed all sweets, meat, and fish from her diet and ate only vegetables. She also started exercising a lot (3-4 times a day). She denied vomiting or using laxatives. During the first year of dietary restriction, she lost 17 kg. At the age of 14 her height was 170 cm, and her weight was 53 kg.

During the first 2-3 months of weight loss, the patient noted increased energy, improved academic success, reduced hours of sleep with awakening at 4-5 a.m., and 2 hours of physical activity before school. The patient was proud of her rapid weight loss. She received compliments from her family and classmates. She was pleased to notice that a former friend, who had insulted and harassed her, began to repeat after the patient in restricting food. Subsequently, her classmates began to insult the patient again, calling her «anorexic". The patient reacted aggressively to her teachers' comments about her appearance and thought, «I will lose even more weight to spite them". However, her parents supported the patient in her dietary restrictions and physical activity.

She lost 20 kg in two years of strict dietary restrictions. At the age of 15, she began to have problems with her menstrual cycle, which resulted in complete amenorrhea. Sleep disorders with frequent awakening, depressive rumination (thoughts - «loser», «I have to work everything off after eating», «I want to be thin»), and memory and attention disorders were added. She was transferred to an individual program of school education, as she could not follow the school curriculum.

Psychological correction initiated by mother and sister and two-week hypnotherapy were ineffective, and her weight continued to decrease. The father sometimes tried to feed the patient himself. This subsequently led to a fear of eating in the presence of the father.

The patient was admitted to the intensive care unit of the Okhmadet Children's Hospital in a state of cachexia. The father denied the presence of AN in his daughter and insisted on the somatic genesis of the disease. During inpatient therapy, her body weight increased by 4 kg, but after discharge from the hospital, the patient refused to eat and partially drink. Her weight began to decrease again.

Psychodiagnostic examination*:* patient (P), mother(M), father (F).

The unitary family was examined on the Family Adaptation and Cohesion Scale (FACES-III) (Table I).

Family cohesion in the patient and her father of the disconnected type, in the mother of the separated type. Family adaptation in the whole family corresponds to the rigid type. Disconnected-rigid type relations between the patient and her father belong to the dysfunctional family system with a low level of family cohesion and low level of family adaptation. This type of family functioning demonstrates low flexibility and adaptability, and an inability to address the adolescent's life tasks as she progresses through the stages of the life cycle. The family system is excessively hierarchical, discussion of important issues is limited, most decisions are made by the leader, and the rules of interaction remain unchanged. Members of the disconnected family are very emotionally separated, have little attachment to each other and behave inconsistently, are unable to support each other, and jointly solve life problems. By isolating themselves from each other and emphasizing their independence, they hide their inability to establish close relationships. When getting close to other members of the family, their anxiety grows. The mother's survey, however, identified a split-rigid type of family system corresponding to a medium-functioning family with less resolution in emotional relationships when the family is still able to get together, discuss problems, support each other, and make joint decisions.

The DERS Emotional Regulation Difficulties Scale assessed individual subscales when testing family members: aversion to emotional reactions; difficulties in goal-directed behavior; difficulties in impulse control; lack of emotional awareness; limited access to emotion regulation strategies; and lack of emotional clarity (Table II)

Thus, in the patient and her mother, a significant aversion to emotional reactions was revealed, which indicated their increased tendency to have a negative secondary or unacceptable reaction to distress. The patient and her father demonstrated a lack of emotional awareness or inattention to both their emotional reactions and those of family members. The father's lack of emotional clarity (low awareness of his own emotions) was revealed.

All family members demonstrated difficulties in goal-directed behavior, namely, the presence of difficulties with concentration and/or task performance when experiencing negative emotions. Impulse control problems: the presence of difficulties with controlling one's behavior when experiencing negative emotions was detected by the patient and her father. Also, the patient and her father had twice as much difficulty as the mother in using emotion regulation strategies.

The patient's father had a high level of alexithymia (96 points) on the Toronto Alexithymia Scale (TAS), consequently, he has difficulty differentiating and verbalizing both his own emotions and those of family members, in contrast to the mother with a low level of alexithymia (60 points). On the Hospital Anxiety and Depression Scale (HADS), the mother had a clinically significant level of anxiety (11 points) in contrast to the father (4 points), who, despite being a physician, was not aware of the danger of the current medical-psychological situation. The mother (3 points) and the father (2 points) were not depressed. According to the Quality of Life Scale (CQLS), the mother was expected to have a low level of quality of life (10 points), and the father had an average level of quality of life (18 points). Consequently, the dysfunctional type of the family system and the threatening medico-psychological situation influenced the mother, which on the one hand made her more vulnerable to mental health deterioration, but on the other hand, allowed her to be more actively and effectively involved in the psychotherapeutic process.

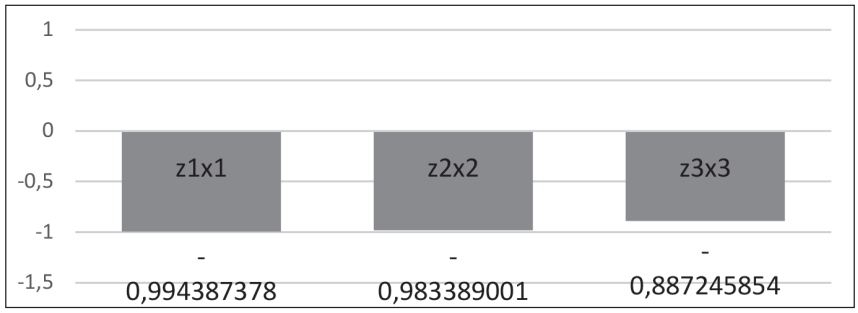

Fig. 1. Pearson correlation coefficients for FACES III and DERS for each family member. Notes: z 1- FACES III patient score ; z 2 – FACES III indicator of the mother; z 3 – FACES III parent rate.

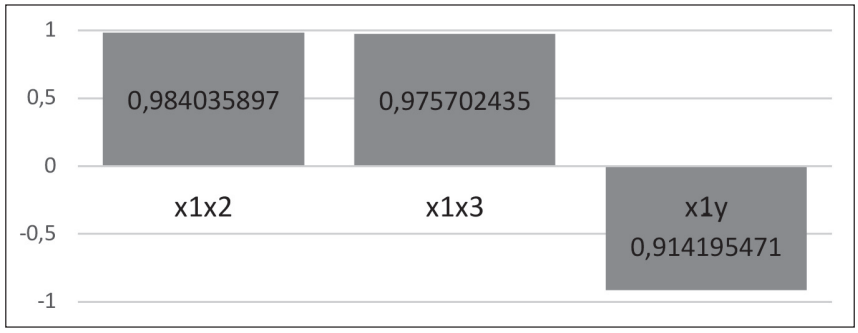

Fig. 2. Pearson correlation coefficients of correspondence of DERS scale values and changes in patient body weight. Notes: x1- patient index for DERS; x2- maternal index of DERS; x3- father's indicator for DERS; y is an indicator of the patient's body weight

Table I. Family Adaptation and Cohesion Scale (FACES-III)

FACES-III (points)	P	M	F
Cohesion (C)	21	31	26
Adaptation (A)	14	21	17
Total	35	52	43

Table II. DERS Emotional Regulation Difficulty Scale (Gratz & Roemer 2004):

DERS (points)	P	M	F
Rejection of emotional reactions (1)	25	30	6
Difficulties in goal-oriented behavior (2)	25	20	24
Difficulties in impulse control (3)	28	15	24
Lack of emotional awareness (4)	25	16	22
Limited access to emotion management strategies (5)	40	24	44
Lack of emotional clarity (6)	21	13	31
Total	164	118	151

Table III. Dynamics of the FACES-III scale

FACESIII	3 m.			6 m.			9 m.			12 m.		
	P	M	F	P	M	F	P	M	F	P	M	F
C	24	34	26	30	38	28	34	40	28	38	43	30
A	21	28	19	24	28	21	24	29	21	26	29	25
Total	45	62	45	54	66	49	58	69	49	64	72	55

The diagnosis and its substantiation. Patient's complaints of sleep disturbance in the form of frequent nocturnal awakenings, decreased mood, fatigue, decreased work capacity; weight loss, presence of negative rumination; anamnestic findings, examination findings, and ICD-10 AN criteria evaluation: weight deficit of more than 15% of normal for age and body size (A); patient's initiation of weight loss by herself, by avoiding eating foods «causing obesity» (B); patient's feeling «too smooth» with the constant fear of overweight.

TREATMENT

A comprehensive treatment program was used, aimed at correcting the entire multidimensional disorder [13-16] The step-by-step therapy plan focused on the causes of the disorder and allowed direct action on the disordered body schema. Correction of the somatic condition: included a rational regimen, a high-calorie diet with small meals, and insulin to overcome food refusal. For the reduction of anxiety-depressive rumination, she received sertraline 50 mg/day and risperidone 1 mg/day [17].

Table IV. Dynamics of the DERS scale

DERS	3 m.			6 m.			9 m.			12 m.		
	P	M	F	P	M	F	P	M	F	P	M	F
1.	22	2 1	6	18	14	8	18	10	6	10	10	7
2.	20	16	24	16	11	20	14	9	15	13	10	13
3.	26	10	2 2	18	9	20	17	9	16	14	10	18
4.	22	14	22	14	12	19	12	11	15	12	8	12
5.	34	2 0	40	28	17	32	22	12	28	19	12	20
6.	21	13	28	12	12	21	11	10	18	8	6	18
Total	145	94	142	106	75	120	94	61	98	76	56	88

Table V. Dynamics of weight of patient for the year of observation

Month	3	6	9	12
Weight kg.	42	45	53	59
BMI Kettle	14.5	15.6	18.3	20.4

Structure of psychotherapeutic healing. Psychotherapeutic intervention in the form of personal and family psychotherapy was conducted on an inpatient basis, continued as an outpatient, and for the period of quarantine restrictions - remotely with the frequency of sessions 3 times a week, where 2 times a week there was individual psychotherapy, and once a week - family therapy. The first task of the patient's psychotherapy was to overcome her ambivalent motivation for therapy and to formulate values that she could accept as the goal of treatment. Subsequently, a combination of elements of psychodynamic and cognitive-behavioral psychotherapy was applied. As a family intervention, attachment-based family therapy (ABFT) was used to bridge the gap in the parent-adolescent relationship and create (or restore) a safe base that could reduce the stress of the relationship with parents at home and/or create a buffer against stressors outside the home (e.g., bullying at school, academic pressure).

Repeat psychodiagnostic assessments were conducted after 3, 6, 9, and 12 months on the FACES-III and DERS scales followed by correlation analysis (Pearson correlation coefficient with small sample adjustment was used). The patient's severity dynamics were monitored throughout the treatment period.

We noted significant gradual positive dynamics of family adaptation and cohesion on the FACES-III scale (Table III), a decrease in difficulties of emotional regulation on the DERS scale (Table IV), and patient weight gain (Table V).

We observed that the FACES-III and DERS scales were in direct linear correlation (Fig. 1), and the patient's emotional regulation score had a direct linear relationship with the parents' emotional regulation score and an inverse linear relationship with changes in body weight (Fig. 2). The functioning of the family as a whole influenced the emotional regulation of each of its members; in turn, the emotional regulation of the parents had a direct influence on the patient's emotional regulation, and the patient's emotional regulation influenced changes body weight.

The emergence of AN in the patient occurred as a result of prolonged dysfunctional emotional processing of life events in a dysfunctional family environment and the immediate environment (classmates). This is what B. Turner [18] drew attention when he emphasized that AN is a mechanism for overcoming the dysfunctional environment. The combination of several factors in a female adolescent during puberty led to defects in emotional regulation, namely: emotional dysfunction within the family (lack of unconditional acceptance from the father), lack emotional security and excessive criticism from the father, frequent quarrels between parents and feelings of guilt for these quarrels, emotional violence in the family and school, perfectionism, repeated frustration against the background of inability to satisfy his desire to be unique among peers. Numerous studies demonstrate a correlation between the occurrence of AN and difficulties in emotional regulation in female adolescents, which correlate with perfectionism. [19-21]

Lack of confidence in the disposition of the close environment (parents, friends) and low reflexive functioning manifest as increased anxiety and avoidance, which in turn may be a predictor of the occurrence of eating disorder symptoms, etc. In patient N. there was a sublimation of the entire complex emotional experience into a serious subjective concern about her body weight and shape, as a way of avoiding and to a certain extent overcoming all existing problems. Also, an important mechanism for the perpetuation of anorexic behavior was the possible autonomy in control of the body itself, since autonomy in other areas of life was not allowed by the father. Anorexic behavior developed against a background of vague emotional experience as a useful means of controlling, regulating, and preventing the emergence of emotions.

The most difficult stage of the therapeutic intervention was the formation of a therapeutic alliance with the patient's father, which was later confirmed by monitoring the dynamics of the psychodiagnostic scales (DERS, Faces-III). The father refused for a long time to see the psychological nature of his daughter's illness and to assume responsibility for her emotional safety, which, in turn, imposed on him the responsibility to self-reflect and control his own emotions (to recognize, realize, contain and correct impulsive behavior concerning family members). Working with the patient's mother was dynamic and productive, which helped her to quickly apply the psychotherapeutic experience gained in family relations and especially in relations with the patient. The psychotherapeutic work also allowed her to be more patient with the changes in the family and, especially, with the personal changes in the patient's father.

CONCLUSIONS

The attachment theory defines the presence of emotionally warm relations in the family as necessary for preserving

the mental health of children. Secure attachment is crucial for the adolescent as he or she adjusts to physical changes, constructs his or her own identity or sets goals for the future, and is an important buffer for psychological risks. The use of attachment-based family therapy (ABFT) psychotherapeutic intervention allowed us to reduce the parent-adolescent relationship gap and create a safe emotional base to reduce the stress of the relationship with parents at home, which was confirmed by positive dynamics of family adaptation and cohesion on the FACES-III scale, reduction of difficulties in emotional regulation on the DERS scale, and restoration of the patient's normal weight.

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