

VALUTAZIONE DEL TRATTAMENTO A UN FOLLOW-UP A BREVE TERMINE DEL QUADRO PSICOLOGICO E SOMATICO IN UN GRUPPO DI ADOLESCENTI CON ANORESSIA NERVOSA

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Riassunto

Oggetto: l'anorexia nervosa è caratterizzata da un'importante restrizione alimentare associata ad un significativo calo ponderale che comporta danni fisici e psicologici. Quest'ultimo aspetto è in parte condizionato dalla malnutrizione ma le evidenze scientifiche al riguardo sono rare. L'intento di questo studio è stato quello di valutare gli aspetti fisici e psicologici delle pazienti con anorexia nervosa ed indagare la relazione tra lo stato nutrizionale in termini di indice di massa corporea, frequenza cardiaca e mestruazioni e lo stato psicologico valutato considerando le risposte a dei questionari self-report.

Metodo: sono state incluse nello studio 45 pazienti arrivate presso la SOD di Neuropsichiatria infantile dell'Ospedale Salesi di Ancona. Dal Settembre 2012 al Settembre 2014. Tutte le pazienti sono state inquadrare dal punto di vista diagnostico seguendo i criteri dell'anorexia nervosa delineati nella quarta edizione del Manuale Diagnostico e Statistico delle Malattie Mentali (DSM IV). Del gruppo iniziale di 45 pazienti solo 34 hanno eseguito un follow-up da 1 anno a 2 anni. In questo periodo seguivano psicoterapia individuale e/o di gruppo ad orientamento entrambe psicodinamico e terapia farmacologica.

Risultati: le osservazioni cliniche mostrano che il trattamento produce un miglioramento a livello fisico ed organico che non corrisponde ad uno stesso miglioramento a livello psicologico.

Conclusioni: il nostro studio suggerisce che gli aspetti psicopatologici non migliorano nelle prime fasi del trattamento in quanto il lavoro è più sulla motivazione alla cura..

Parole chiave: anorexia nervosa, alessitimia, trattamento, indice di massa corporea, frequenza cardiaca, mestruazioni

EVALUATION'S TREATMENT IN A SHORT-TERM FOLLOW-UP OF THE PSYCHOLOGICAL AND SOMATIC PROFILE IN A GROUP OF ADOLESCENT WITH ANOREXIA NERVOSA

Abstract

Objective: anorexia nervosa is characterized by an important alimentary restriction associated with a significant weight loss that involves both physical and psychological damage. This aspect is partially

SOTTOMESSO NOVEMBRE 2018, ACCETTATO GIUGNO 2019

sequelae of malnutrition, but evidence-based data are still very rare. The aim of the present study is to assess the clinical and psychological aspects of anorexia nervosa patients and to investigate the link between nutritional status, in terms of body mass index, hearth rate, menses and psychological status, in terms of scores from administered self-report questionnaires.

Method: 45 subjects, attending the SOD Child Neuropsychiatry Company Hospitals of Ancona from September 2012 to September 2014, were included in this study. All participants fulfilled the Diagnostic and Statistical Manual of Mental Disorders fourth (DSM- IV) edition criteria for restrictive sub-type anorexia nervosa. Compared to initial of 45 patients only 34 adolescents, took part to 1 to 2 years follow-up. In this period they received individual and/or group psychotherapy both psychodynamic and pharmacological therapy.

Results: clinical observations show that multidisciplinary treatment produce a physical improvement, but it do not determine a psychological improvement of the same entity.

Conclusions: multidisciplinary approach has the function of motivation to care.

Key words: anorexia nervosa, alexthymia, treatment, body mass index, hearth rate, menses

Introduction

Anorexia nervosa (AN) is characterized by severe restriction in energy intake that leads to low body weight. In pediatric patients, low body weight is relative to expected weight, adjusted for age, sex, developmental trajectory, weight history and physiological disturbances. Additional criteria include an intense fear of gaining weight, behaviors that interfere with weight gain, an undue influence of body shape or weight on self-evaluation or a lack of recognition of the seriousness of their low body weight. There are two subtypes of AN: restricting and binge-eating/purging. AN generally begins in adolescence or young adulthood, and it is estimated that clinical populations of individuals with AN represent a 10:1 female-to-male ratio (DSM-5 2013).

AN is determined by a complex interaction between genetic factors, family dynamics, stressful life events and features of personality functioning (Polivy and Herman 2002). For example, patients with AN show high levels of perfectionism, which is a risk and maintenance factor for the disorder (Boone et al. 2013). AN is associated with significant medical and psychosocial complications (Smink et al. 2012), such as dermatological, gastrointestinal, endocrine, hematologic, neurologic, cardiovascular and pulmonary complications. These complications become more apparent as the patient's weight falls further from normal, but they are reversible with weight gain and nutritional rehabilitation (Mehler and Brown 2015).

The most frequent comorbidities are mood and anxiety disorders, in particular obsessive compulsive disorder (Salbach et al. 2008). Additionally, it is estimated that 22-28% of adolescents with AN meet criteria for a cluster C personality disorders (avoidant, obsessive-compulsive) (Magallon-Neri et al. 2011) (Gaudio and Di Ciommo 2011). Subjects with AN have high levels of alexithymia which describes people with difficulty of identifying and communicating emotions, discriminating them from bodily sensations and with a limited fantasy and a concrete, externally oriented cognitive style (Pinna et al. 2015). Approximately 11% of patients endorse suicidal ideation and 4% report engaging in self-harming behavior (Buhren et al. 2013).

Due to the severity of the medical and psychological aspects of AN, a multi-level and multidisciplinary treatment program is required. Different levels of care include hospitalization, day hospital and outpatient treatment. Treatment for AN includes medical stabilization, weight restoration, nutritional and physical education and different psychological, psychodynamic and behavioral treatments (individual, group or family therapy) (Williamson et al. 2004). Medications such as antidepressants, antipsychotics, anxiolytics, prokinetic agents and appetite-enhancing

agents have been used with limited success (Mitchell et al. 2003). The aim of the present study among AN patients is to assess their clinical and psychological aspects and to investigate the link between some physical parameters and between nutritional status, in terms of body mass index (BMI), and psychological status, in terms of the scores from the administered self-report questionnaires.

Material and method

45 subjects, attending the SOD Child Neuropsychiatry Hospitals of Ancona from September 2012 to September 2014, were included in this study. All participants fulfill the Diagnostic and Statistical Manual of Mental Disorder (DSM-IV) criteria for restrictive sub-type AN and have between 11 and 18 years. Exclusion criteria are the presence of severe organic diseases which compromise the nutritional and metabolic and/or psychic state and the presence of cognitive deficits that prevent the understanding of psychological tests.

Evaluation and admission (T1) are performed through anamnesis and clinical and nutritional interview. Clinical assessment are based on blood tests, electrocardiogram (EKG), abdomen and pelvis ultrasound, weight, height, heart rate, blood pressure. In our work we consider BMI, heart rate, blood pressure and presence/absence of menses.

Psychological assessment are based on projective tests: tests to evaluate specific personality disorders Minnesota Multiphasic Personality Inventory (MMPI-A), Children's Depression Inventory (CDI) and tests on eating disorders Eating Disorder Inventory-2 (EDI-2), Self-administered psychiatric scales for children and adolescents (SAFA), Toronto Alexithymia Scale-20 (TAS-20) and Symptom Checklist-90 (SCL-90). 34 patients participate in a 1 to 2 years follow-up. In this period, they receive individual and/or group psychotherapy, both psychodynamic and medication (SSRI, atypical antipsychotics, benzodiazepines). At the end of the follow-up (T2) patients are evaluated clinically and psychologically with the same methods.

Statistical analysis

Quantitative variables are synthesized using median, 1st quartile and 3rd quartile, while the qualitative variable menses are synthesized using the frequencies and percentages. We evaluate absolute changes between T1 and T2 measurements of heart rate and BMI. For medians and percentage frequencies we calculate 95% confidence intervals (95% CI). We also evaluate the change of menses as percentage of patients who have no menses either before or after treatment, percentage of patients with menses only after treatment, percentage of patients who have menses both before and after treatment, and percentage of patients with menses before but not after treatment. Comparison of the change in the state of menses among underweight patients and not (BMI grouping at T2: $BMI \leq 17,5 \text{ Kg/m}^2$ and $BMI > 17,5 \text{ kg/m}^2$) are performed using the Fisher's exact test.

Analysis of the Spearman rank correlation is used to assess the link between:

- the absolute change in BMI and the absolute change in heart rate;
- the absolute change in BMI and the TAS-20 score at T2;
- the absolute change in BMI and the SCL-90 GSI score at T2.

Statistical significance is determined using a probability of error of 5.

Results

The sample at Time 1 (T1) consists of 45 individuals, of which 41 females and 4 males, aged between 11 and 18 years, with an average age of 15.18 at first access ($SD = \pm 1, 90$).

There is family history of psychiatric disorders in 42% of patients: an eating disorder is found in 18% of cases, a depressive disorder in 15% and an anxiety disorder in 9%. Traumatic life events are found in 27% of patients: parental separations in 18% of cases, family deaths in 7% and other events in 2%. In 22% of patients are concomitant psychiatric disorders: Obsessive-Compulsive Disorder in 7% of cases, Anxiety Disorder NOS in 7%, Obsessive-Compulsive traits in 2% , Borderline Personality Disorder in 2% , Personality Disorder NOS in 2%, Somatoform Disorders in 2%.

11 patients (24.4%), before our evaluation have already undertaken a psychological and/or nutritional treatment. The remaining patients have not received any treatment before.

The mean value of BMI at diagnosis is 16 ($SD = \pm 2.14$), the mean value of heart rate is 57.2 bpm ($DS = \pm 14.21$), the mean systolic blood pressure is 95.86 mmHg ($SD = \pm 11,03$) and the mean diastolic blood pressure is 58.50 mmHg ($SD = \pm 7.62$). 7 patients (15.5%) at admission have no menarche. Among 38 patients who have menarche, 76% has amenorrhea. 22 patients (48.9%) require hospitalization and 45.4% of them underwent parenteral and/or enteral nutrition. All patients are followed longitudinally with medical and nutritional checks. 22 patients (49%) receive individual and/or group psychotherapy and psychopharmacological therapy with SSRIs and/or atypical antipsychotics, 20 (44%) of them receive only psychotherapy and 3 (7%) receive no therapy.

At the beginning of the therapeutic process, patients show a tendency to refuse or minimize the disease, with a hostile and oppositional behavior. Other psychological features are an obsessive thought polarized on weight and body shape, dysfunctional beliefs on metabolism and nutrition, a distorted perception of hunger and satiety, social withdrawal, extreme sensitivity to external judgment, poor self-esteem, inflexibility, tendency to perfectionism and emotional inhibition. Those data appear from clinical interviews with patients.

The final sample at Time 2 (T2) consists in 34 patients who have a follow up ranging from 1 to 2 years and are considered for final discussion. This subgroup consists of 32 females and 2 males, with an average age of 15.09 years at admission ($SD = \pm 2.06$). 19 patients (56%) receive individual and/or group psychotherapy and psychopharmacological therapy with SSRIs and/or atypical antipsychotics, 14 patients (41%) receive only psychotherapy and 1 patient (3%) do not receive any treatment. While monitoring, the majority of patients show a slow and gradual functional improvement, sometimes independent of the general organic conditions. In particular, there is a greater compliance to treatment, an improvement of social interaction, a greater insight and a greater emotional awareness and regulation. To objectify the findings from the clinical and psychological observation we perform a statistical analysis on data from the psychological tests.

First of all we consider EDI's subscales, BMI and hearth rate at T1 and T2: the median value of BMI (15.9) indicates a condition of marked underweight; the median value of heart rate is 53.5 bpm, but 25% of patients have ≤ 47 bpm; EDI-2 subscales showing pathological values are ID (interpersonal distrust) and MF (maturity fears) (median (95%CI):7 (5.12;8.88) and 9 (7.35;10.65), respectively for ID and MF). There are no significant variations in EDI-2 subscales between T1 and T2. However, we can note that DT (Drive for thinness) subscale at T2 shows a 1 point reduction compared to T1 and BD (Body dissatisfaction) subscale at T2 shows a 0.5 points increase compared to T1 (**table 1**).

Table 1. Baseline values (T1) and absolute change (T1-T2) of EDI-2 subscales, heart rate and BMI in patients completing the follow-up (n=34).

EDI's subscales, BMI and heart rate at T1 and T2: the median value of BMI (15.9) indicates a condition of marked underweight; the median value of heart rate is 53.5 bpm, but 25% of patients have ≤ 47 bpm; EDI-2 subscales showing pathological values are ID (interpersonal distrust) and MF (maturity fears) (median (95%CI):7 (5.12;8.88) and 9 (7.35;10.65), respectively for ID and MF). There are no significant variations in EDI-2 subscales between T1 and T2. However we can note that DT (Drive for thinness) subscale at T2 shows a 1 point reduction compared to T1 and BD (Body dissatisfaction) subscale at T2 shows a 0.5 points increase compared to T1

		T1	T1-T2	
		Median (1 st ; 3 rd quartiles)	Median (1 st ; 3 rd quartiles)	P
EDI2 sub- scales	DT	11.5 (3 ;19)	1 (0 ;6)	0.025
	BU	0 (0 ;1.8)	0 (0 ;0)	0.967
	BD	12.5 (5.3 ;20)	-0.5 (-3.8 ;6.5)	0.455
	IN	6.5 (4 ;13.8)	0 (-3 ;1.8)	0.906
	P	3.5 (1.3 ;6)	0 (-0.8 ;1.8)	0.244
	ID	7 (3.3 ;10)	0 (-2 ;3.8)	0.248
	IA	6.5 (4 ;12)	0.5 (-1.8 ;3.8)	0.382
	MF	9 (4.3 ;12)	1 (-1 ;4.8)	0.038
	ASC	5.5 (3 ;7.8)	0 (-2 ;2)	0.901
	IR	4 (1 ;10)	0 (-2 ;1)	0.617
	SI	7 (4 ;9)	-0.5 (-2.8 ;3)	0.949
Heart Rate (beats/minutes)		53.5 (47.8 ;71.5)	-12 (-20.5 ;-1)	<0.001
BMI (kg/m ²)		15,90 (14.2 ;17.5)	-2.05 (-4.9 ;-0.7)	<0.001

Legend. DT: Drive for thinness. BU: Bulimia. BD: Body dissatisfaction. IN: Ineffectiveness. P: Perfectionism. ID: Interpersonal distrust. IA: Interoceptive awareness. MF: Maturity fears. ASC: Ascetism. IR: Impulse regulation. SI: Social insecurity.

Secondly we consider distribution of BMI, presence of menses, SCL-90's scales and TAS's scales at T2: the median value of BMI (18.4) indicates a situation of normal weight, but 25% of patients are underweight with a BMI ≤ 16.6 ; 65% of patients (among the 26 patients evaluable for secondary amenorrhea) have menses after treatment; GSI and the SCL-90 subscales SOM (somatization), O-C (obsessive-compulsive), INT (interpersonal sensitivity), DEP (depression), ANX (anxiety), HOS (hostility), PAR (paranoid ideation) and PSY (psychoticism) are pathological; the median value of TAS-20 is 55, borderline value for alexithymia. The percentage of subjects (N=34) that have alexithymic features is 58.8% (29.4% Borderline Alexithymia; 29.4% Alexithymia), confirming the recent empirical evidence demonstrating the presence of alexithymia in anorexic patients. The median values of the three subscales scores are: F1 (Difficulty Identifying Feelings) 18.5 (possible values from 7 to 35), F2 (Difficulty Describing Feeling) 15.5 (possible values from 5 to 25), F3 (Externally-Oriented Thinking subscale) 21 (possible values from 8 to 40) (**table 2**)

Table 2. T2 score distribution of GSI, SCL-90 subscales, TAS-20, distribution of BMI and presence of menses

Distribution of BMI, presence of menses, SCL-90's scales and TAS's scales at T2: the median value of BMI (18.4) indicates a situation of normal weight, but 25% of patients are underweight with a BMI ≤ 16.6 ; 65% of patients (among the 26 patients evaluable for secondary amenorrhea) have menses after treatment; GSI and the SCL-90 subscales SOM (somatization), O-C (obsessive-compulsive), INT (interpersonal sensitivity), DEP (depression), ANX (anxiety), HOS (hostility), PAR (paranoid ideation) and PSY (psychoticism) are pathological; the median value of TAS-20 is 55, borderline value for alexithymia. The percentage of subjects (N=34) that have alexithymic features is 58.8% (29.4% Borderline Alexithymia; 29.4% Alexithymia), confirming the recent empirical evidence demonstrating the presence of alexithymia in anorexic patients. The median values of the three subscales scores are: F1 (Difficulty Identifying Feelings) 18.5 (possible values from 7 to 35), F2 (Difficulty Describing Feeling) 15.5 (possible values from 5 to 25), F3 (Externally-Oriented Thinking subscale) 21 (possible values from 8 to 40)

	N	Median	CI95%	1° quartile	3° quartile
GSI	34	1,16	0,82 ; 1,5	0,78	1,95
SOM	34	1,17	0,85 ; 1,48	0,67	1,81
O-C	34	1,35	1,05 ; 1,65	0,80	1,90
INT	34	1,33	0,81 ; 1,86	0,78	2,83
DEP	34	1,39	0,95 ; 1,82	0,79	2,35
ANX	34	1,25	0,87 ; 1,63	0,60	2,00
HOS	34	1,00	0,77 ; 1,23	0,50	1,33
PHOB	34	0,36	0,16 ; 0,55	0,14	0,86
PAR	34	1,67	1,22 ; 2,12	0,83	2,50
PSY	34	1,25	0,42 ; 1,08	0,30	1,48
SLEEP	34	0,83	0,03 ; 1,31	0,33	2,67
TAS-20	34	55,00	50,39 ; 59,61	44	61
F 1	34	18,50	15,25 ; 21,75	12	23,75
F 2	34	15,50	13,06 ; 17,94	10,25	19
F 3	34	21,00	19,1 ; 22,9	17	23,75
BMI (kg/m²)	34	18,40	17,37 ; 19,43	16,6	20,4
MENSES [n (%)]	26	17 (65)	0,44 ; 0,83		

Thirdly we analyze change distribution of menses depending on the T2 BMI: the percentage of patients who have menses at T2 is significantly higher in those with BMI > 17.5 compared to those with BMI $\leq 17,5$ ($p=0.04$) (**figure A**).

At the end we consider the results of Spearman correlation between the absolute change in BMI and the absolute change in heart rate, GSI and TAS-20 scores. A weak positive correlation ($r=0.39$) is found between the absolute change in BMI and the absolute change in heart rate. The correlation between the absolute change in BMI and TAS-20 score at T2 and the correlation between the absolute change in BMI and SCL-90 GSI score at T2 is in both cases negligible ($r=0.15$) (**figure B**).

Figure A. Menses change distribution between T1 and T2 depending on the T2 BMI. Change distribution of menses depending on the T2 BMI: the percentage of patients who have menses at T2 is significantly higher in those with BMI > 17.5 compared to those with BMI ≤ 17.5 (p=0.04)

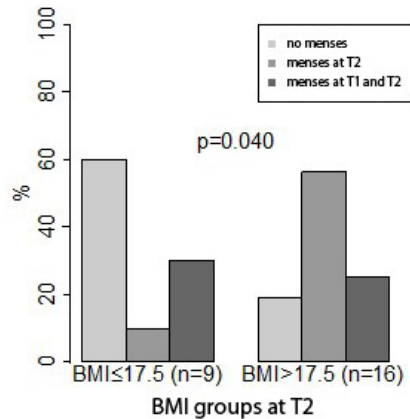
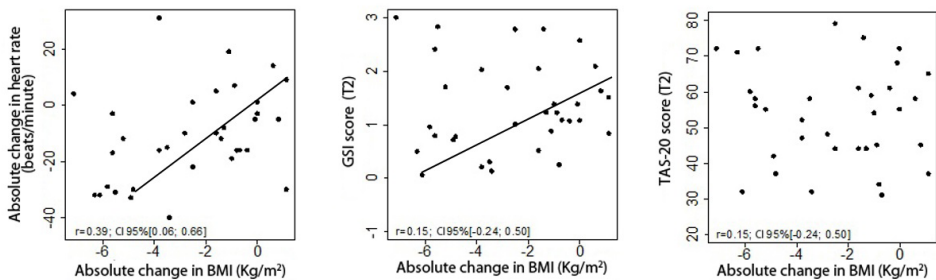


Figure B. Results of the Spearman correlation between the absolute change in BMI and the absolute change in heart rate, GSI and TAS-20 scores. The results of Spearman correlation between the absolute change in BMI and the absolute change in heart rate, GSI and TAS-20 scores. A weak positive correlation ($r=0.39$) is found between the absolute change in BMI and the absolute change in heart rate. The correlation between the absolute change in BMI and TAS-20 score at T2 and the correlation between the absolute change in BMI and SCL-90 GSI score at T2 is in both cases negligible ($r=0.15$)



Discussion and conclusions

Our study, 34 patients followed for 1-2 years, shows that multidisciplinary treatment produces a physical improvement: heart rate normalizes following refeeding and weight gain; the patients with menses at T2 is significantly higher in those with BMI>17.5 compared to those with BMI≤17,5 (p=0.04). Then hearth rate and menses, significantly correlated with BMI's, increase, in line with literature data (Yahalom et al. 2013). Clinical observation shows a psychological improvement although the absolute changes of EDI-2 subscales are not statistically significant; as previously suggested, it is very difficult to interpret the psychological improvement in these patients. At T1 EDI-2 subscales with pathological scores is interpersonal distrust (ID) and maturity fears (MF). Maturity fears is the fear of adulthood that in anorexic patients is expressed in a significant weight loss that results in the fixation or regression to a prepubertal appearance. Interpersonal distrust may explain the withdrawal and poor therapeutic compliance of these patients. Drive for thinness (DT) subscale score is reduced to follow up (T2), while body dissatisfaction (BD) subscale score increase. The multidisciplinary treatment does not seem to have positive effects on body dissatisfaction. This can be explained by the fact that body image distortion is a nuclear element in AN. At time 1 (T1) SCL-90 subscales with pathological scores are SOM, O-C, INT, DEP, ANX, HOS, PAR, PSY and GSI. Patients, in fact, show anxious and depressive symptoms, obsessive thinking about food and body weight, hostile behavior, social withdrawal and feelings of inadequacy and ineffectiveness and this scores are not correlated with BMI. This study, in line with some study of literature, find no correlation between weight gain and psychological symptoms (Probst et al 1999) (Channon and De Silva 1985). As reported in the literature, patients in our sample have difficulties in identifying and describing their emotional states in 58.8% of cases (29.4% of borderline cases and 29.4% of alexithymic cases) (Kaway et al. 2008) (Shiveley et al. 2009, Brinkworth et al. 2009). The absence of a correlation between the absolute change in BMI and TAS-20 score indicates that the change in clinical status (BMI) is independent of alexithymia. The three subscales F1, F2 and F3 are homogeneously represented: subjects have both difficulty in identifying and describing feelings and an externally oriented thinking.

These findings suggest the multidisciplinary approach determines, at short time follow-up, a physical improvement in patients, expressed by the statistically significant change in BMI, heart rate and menses. Psychological improvement, instead, results clinical but is not statistically significant. The study limit is the sample slightness that reduce the statistical power nevertheless one possible explanation of these data is the facility to objectify physical changes rather than psychological changes which take more time to being effective and measurable. This information confirms that, as stated by clinical impression, physical improvement (gain weight, menses, heart rate) does not imply the resolution of psychological problem, as patients and their families would believe. The multidisciplinary approach has the function to increase the importance of a very long psychological therapy to have an improvement in psychological symptoms. We plan to follow our sample to do a long follow up to evaluate possible improvements of psychological evolution.

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