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Original article

Naturalistic follow-up of subjects affected with anorexia nervosa 8 years after multimodal treatment: Personality and psychopathology changes and predictors of outcome

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ABSTRACT

Background: Eating disorders (EDs) are serious mental illnesses of growing clinical and social impact. Despite their severity, there is still no satisfactory evidence-based treatment. Follow-up investigations are the most reliable studies to enlighten long-term outcome predictors and modifiers.
Methods: In total, 59 subjects affected with anorexia nervosa were assessed 8 years after their admission into an outpatient multimodal treatment program for eating disorders. The follow-up changes in diagnostic criteria were compared with Chi-square test. Improved and not-improved subjects were compared. Clinical, personality and psychopathology features between T0 and T1 were compared with *t*-test for repeated measures. Correlation between T0 features and changes at T1 in personality and psychopathology features were assessed.
Results: The rate of complete remission was 42%, an overall rate of 67.8% improved, a rate of 18.6% worsened. Concerning personality, a significant decrease of harm avoidance and increase in self-directedness were evidenced. Interoceptive awareness, drive for thinness, bulimia were significantly reduced at follow-up. Many T0 personality facets were related to personality and psychopathology improvement at follow-up.
Conclusion: Multimodal treatment encompassing psychiatric, nutritional and psychological approaches is at the moment the most reliable approach for the treatment of moderate to severe anorexia nervosa with a discrete rate of improvement. Some personality and psychopathology characteristics may represent specific factors which favor resistance and impair improvement. Future approaches should consider the personalization of therapeutic approach according to these features.

1. Introduction

Anorexia nervosa (AN) is a group biologically-based serious mental illness of growing clinical and social impact due to its increasing prevalence in general population, and to its long and severe course, associated to high rates of chronicity, mortality and relapse [1–4].

Current follow-up studies on AN are limited in number, hampered by dropout rates, sample width, and heterogeneity, and also affected by a lack of consistence about definitions of recovery, remission and relapse [5]. According to literature studies published in the last ten years, AN course and outcome show a huge heterogeneity [6]. Remission rates appeared to be related with follow-up duration, with global EDs remission rates around 48.7% at 2.5 years follow-up [7]. Nevertheless, it is frequent the diagnostic crossover, and there is a heavy influence of complicating factors on outcome [8].

The AN shows the highest time to obtain remission among other eating disorders (EDs) [7,8]. Remission rates for AN are 37.1% after 2.5 years, with partial remission but favorable outcome in 68.6% of patients [7], and from 52.1% to 53.9% after 6 years [9]. These results are maintained at 12 years follow-up [10]. Binge-purging subtype of AN showed lower recovery rates than restricter subtype [7]. Studies with more restrictive criteria, that consider remission as stable absence of any eating symptom and maintenance of normal BMI for almost 3 years, showed considerably lower remission rates, around 15% in AN at 12 years follow-up [5]. Transitions from AN to full criteria BN are less frequent (cumulative probability across studies around 2:1) and crossover from BN to AN are unlikely (cumulative probability around 13:1) [8].

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In addition to the heterogeneity of the findings, a major limit of follow-up studies is that they are mostly based on objective symptoms and body weight [11–13] while emotional and behavioral aspects are often neglected, despite evidences that residual emotional and psychosocial impairments increase relapse risk [14–17].

To provide an overall assessment of the functioning of the patients along with the comorbidities of their eating disorders may be relevant to the evaluation of its therapeutic needs, and in determining its course and outcome [11,18].

Personality traits have proven to influence EDs onset, maintenance and prognosis [4,17,19–22]. Nevertheless, the study of their changes in time has been largely neglected by current follow-up studies [23]. According to Cloninger's model, EDs are characterized by peculiar personality profiles. The dimensional approach of Cloninger's model investigates seven personality traits and the Temperament and Character Inventory is an instrument of evaluation that has been used previously to deepen the knowledge about personality traits of different psychiatric patients with great reliability in the scientific field [24]. AN patients show lower Novelty Seeking (NS) and Cooperativeness (C) and higher Persistence (P) than general population [21,24,25] and with respect to healthy siblings of the same family [26]. Psychological treatments modify personality traits, driving EDs patient's closer to healthy controls [21,27]. HA, P, SD and ST significantly change after psychological treatments, independently from ED diagnosis and BMI changes [28], with an overall reduction of HA and ST and an increase of RD, SD and C [29,30]. Nevertheless, recovered patients with AN still show higher HA and higher P [31] and lower SD [32] than healthy controls.

Our study provides a prospective 8-years investigation on a sample of AN patients treated with an integrate treatment model. As an adjunct to clinical outcome variables (e.g. the modification of eating attitudes and behaviors, and of diagnostic criteria), the assessment of the present research also encompasses the changes in TCI personality traits, in EDI-II eating psychopathology, along with in general psychopathology. Finally, the present research also explores the relationship between changes in personality traits and those in eating and general psychopathology. The hypothesis is that personality changes may play a role in the long-term outcome of the disease. Clinical and therapeutic implications of our results in the context of eating disorders treatment will be discussed.

2. Methods

We recruited a sample of 264 female outpatients from Eating Disorder Pilot Center of the Department of Neuroscience (CPR DCA), University of Turin, first evaluated between January 1st, 2003 and December 31st, 2005 (T0 time of this study) who received a full diagnosis of AN according to DSM-IV or DSM-IV-TR. The diagnosis was established by a psychiatrist during the first examination at the intake in the center (T0) and at the follow-up point 8 years later (T1) using the Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders, Revised Third Edition (SCID-I) [33]. Other inclusion criteria were (1) the absence of previous or current full criteria comorbidities assessed both at T0 and between T0 and T1 with the SCID-I; (2) the lifetime absence of a psychosis or another major psychiatric diseases; (3) patients have been treated for at least 2 years at Regional Pilot Center for Eating Disorders with full adherence to standard therapeutic protocol: psychiatric visits once/month; diet-therapy follow-up once/month and Brief-Adlerian Psychodynamic Psychotherapy (B-APP) of 20 sessions (once/week) according to the manualized model of Fassino and coworkers [34].

All patients gave their informed written consent. The Institutional Review Board of "AOU Città della Salute e della Scienza di Torino" approved this study.

Among 264 eligible subjects, 121 were contacted to be enrolled in research while 143 were out of reach. Among these 33 refused to take part in the study for personal reasons and 29 they did not gave back the package of tests or filled them incorrectly. Finally, 59 subjects with AN participated into the study.

2.1. Outcome measures

Clinical data (height, weight, BMI and minor psychiatric symptoms) of participants were collected at their first access into the center (T0) and at the time of follow-up (T1), and in both time points they were assessed with a battery of psychometric tests including: Temperament and Character Inventory (TCI) [35]; Eating Disorder Inventory-2 (EDI-2), [36]; The Body Shape Questionnaire (BSQ) [37]; The Binge Eating Scale (BES) [38]; Beck Depression Inventory (BDI) [39].

2.2. Statistical analysis

The sample recruited for the follow-up study was compared with the whole sample of patients admitted in the Outpatient Service in the period of the follow-up using the ANCOVA corrected for age, age of onset and years of study to evidence the level of representativeness of the final follow-up sample. A $P < 0.001$ level of significance was applied to this analysis.

The rates of each diagnosis at T0 and at T1 were compared with the χ^2 test.

The *t*-test for repeated measures was applied to the clinical measures, personality traits, eating psychopathology of whole sample. The diagnostic subgroups were not considered separately because of the numeric exiguity. The personality dimensions showing significant changes at follow-up were referred to the percentile distribution of the normative sample [35].

Based on the clinical evolution the subjects were subgrouped into four groups: (1) "healed" group (i.e. who did not display the DSM 5 criteria for an eating disorder at T1); (2) "improved" group (rise of the BMI higher than 1 point with respect to T0); (3) "stable" group (those who did not worsen); (4) "worsened" group (those who displayed a worsening of the BMI).

The four groups were compared at T0 with one-way ANOVA to evidence possible prognostic factors. A *t*-test for repeated measures between T0 and T1 was performed separately between the not-worsened (healed + improved + stable) and the worsened groups to evidence risk factors for long-term worsening.

In order to evidence the relationship between the changes in personality and psychopathology traits and baseline features they were computed the delta scores (T1 minus T0 score) for each variable which displayed a significant change at follow-up. They were performed two linear regression analysis: first they were used the T0 personality traits as independent variables and the deltas as dependent ones. Second they were used the deltas of personality traits as independent variables and the deltas of clinical and psychopathology measures as dependent ones.

Statistical analysis were carried out with SPSS 17 for Windows. In consideration of the explorative and naturalistic nature of the follow-up study it was considered a $P < 0.05$ for significance threshold.

3. Results

No significant difference was found with ANCOVA between the follow-up and the sample recruited at T0.