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Depression, anxiety, and obsessionality in long-term recovered patients with adolescent-onset anorexia nervosa

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Introduction

In anorexia nervosa (AN), specific eating disorder psychopathology is frequently associated with symptoms of depression, anxiety, and obsessive-compulsive behavior which also develop secondary to semistarvation (Minnesota Starvation Study, Franklin et al. 1948). Therefore, it has long been discussed whether these symptoms may be core features of the anorexic personality or emerge secondary to starvation and weight loss. A few studies have already reported on high prevalence rates of anxious, depressive, and obsessive symptoms in long-term

■ **Abstract** Anorexia nervosa (AN) is frequently associated with symptoms of depression, anxiety, and obsessive-compulsive behavior which also develop secondary to semistarvation. It is less certain if these symptoms persist after recovery. A few studies have already reported on high prevalence rates of anxious, depressive, and obsessive features in long-term recovered patients with AN, but several of these so called “long-term” recovered patients had only maintained weight restoration for six to twelve months. The aim of this study was to determine whether depressive, anxious, and obsessive-compulsive symptoms persist in truly long-term recovered patients (BMI $20.3 \pm 2.5 \text{ kg/m}^2$) who no longer had any eating disorder symptoms (including weight phobia) for at least 3 years. Seventeen subjects of

an AN sample ($n = 39$) previously described in a 10-year follow-up met our strict criteria of at least 3 years of complete recovery of AN. In comparison to 39 age-, sex-, and occupation-matched healthy subjects without a history of psychiatric or eating disorder, long-term recovered patients had higher levels of depressive ($p = 0.002$), anxious ($p = 0.006$), and obsessive-compulsive ($p = 0.015$) features but did not differ with regard to psychiatric morbidity and psychosocial adaptation. In conclusion, depressive, anxious, and obsessive-compulsive symptoms may be personality traits in subjects with former adolescent anorexia nervosa.

■ **Key words** long-term recovery – trait factors – anxiety – depression – ocd

recovered anorexics (Herpertz-Dahlmann and Remschmidt 1993; O’Dwyer et al. 1996; Pollice et al. 1997). However, several of these so called “long-term” recovered subjects had only maintained weight restoration for six to twelve months. This may be critical because even weight-stable AN patients still demonstrate a variety of eating disorder symptoms including recurrent episodes of starvation which might contribute to ongoing comorbid psychopathology (Windauer et al. 1993; Herpertz-Dahlmann et al. 1996; Strober et al. 1997).

The aim of this study was to determine whether depressive, anxious, and obsessive symptoms persist in truly long-term recovered patients who no longer had

any eating disorder symptoms (including weight phobia) for at least three years and in whom starvation influenced psychopathology could therefore be ruled out.

Methods

Subjects

The sample has been fully described in previous papers (Herpertz-Dahlmann et al. 1996 and 2001). The original sample consisted of 39 adolescent inpatients (32 female, 7 male, age 16.2 ± 2 years) who were admitted consecutively to the university hospital of Marburg and fulfilled DSM-III-R criteria for AN. Follow-up was conducted 3, 7, and 10 years after discharge. At the 3-year and 7-year follow-up, 34 patients (88%) participated in the personal reassessment; at the 10-year follow-up the entire sample (age 27 ± 1.9 years) was assessed. The study was approved by the Ethics Committee of the University of Marburg.

Definition of long-term recovery

Patients were defined as long-term recovered when they were rated as having a good outcome according to the modified Morgan & Russell outcome classification system including regular menses and stable weight (Ratnasuriya et al. 1991) and did not meet criteria for any kind of eating disorder including eating disorder not otherwise specified (EDNOS) during the past 3 years. In addition, we excluded patients with “weight phobia” (preoccupation with body slimness and weight or with food and eating) as assessed by the Structured Interview for Anorexia and Bulimia Nervosa (SIAB; Fichter et al. 1990). At the 10-year follow-up, 17 (44%) of the original 39 patients met criteria of long-term recovery. With regard to psychiatric morbidity and psychosocial adaptation, they did not differ from controls (Herpertz-Dahlmann et al. 2001). The control group consisted of 39 age-, sex-, and occupation-matched healthy subjects who had no former or current eating disorder as assessed by the SIAB (for further information of recruitment of controls see Herpertz-Dahlmann et al. 1996 and 2001).

Psychometric instruments

The following instruments were applied in the assessment of eating disorder and depressive, anxious, and obsessive-compulsive symptoms:

- The Structured Interview for Anorexia and Bulimia Nervosa (SIAB, Fichter et al. 1998) is a validated and reliable expert interview for specific and general psy-

chopathology of eating disorders. Additionally it generates DSM-IV diagnoses of eating disorders by computerized algorithms. This was applied at the 7- and 10-year follow-up.

- The Hamilton Depression Rating scale, 21 item version (HAMD, Williams 1988), was applied at discharge, 3-, 7-, and 10-year follow-up.
- The Anorexia Nervosa Inventory for Self Rating (ANIS; Fichter and Keeser 1980) is a 32-item questionnaire covering AN psychopathology and eating habits. It includes the subscale “obsessive-compulsive traits” (5 items) focusing on typical obsessive compulsive phenomena in patients with AN like perfectionism, rituals and organisation. It was applied at the 7- and 10-year follow-up.
- The Hopkins Symptom Check List (SCL-90-R, Derogatis 1986) includes nine subscales: somatization (12 items), obsessive-compulsive (10 items), interpersonal sensitivity (9 items), depression (13 items), anxiety (10 items), anger-hostility (6 items), phobic anxiety (7 items), paranoid ideation (6 items) and psychoticism (10 items). The subscale obsessive-compulsive focuses on thoughts, impulses, and actions that are experienced as unremitting and irresistible. This was applied at the 7- and 10-year follow-up.

Statistics

Differences in BMI were assessed using 2-sided t-test, differences in HAMD scores, SCL-90-R scores, and ANIS-score were assessed using Mann-Whitney test.

Results

Results of the comparison between patients and controls of psychometric data and BMI at the 10-year follow-up are shown in Table 1. Besides the SCL-90-R subscales “anxiety” ($p = 0.006$) and “obsessive-compulsive” ($p = 0.028$), the scales “phobic anxiety” ($p = 0.022$) and “interpersonal sensitivity” ($p = 0.034$) as well as the total score ($p = 0.024$) were significantly higher in former patients in comparison to controls at the 10-year follow-up. In the patient group mean T-values of the subscales “anxiety” (53 ± 10) and “obsessive-compulsive” (54 ± 13), the scales “phobic anxiety” (55 ± 15), “interpersonal sensitivity” (54 ± 11) and the total score (54 ± 12) indicate mild to moderate psychological distress. According reference values of adult non-patients given in SCL-90-R manual subjects with T-values between 60 and 70 express marked psychological distress, whereas T-values above 70 express a high/very high distress. In comparison to controls patients had higher scores of the SCL-90-R subscale “depression” although

Table 1 Comparison of BMI (t-test), HAMD score, SCL-90-R score, and ANIS score (Mann-Whitney test) of 17 long-term recovered anorectic patients at 10-year follow-up with 39 age-matched healthy controls

	Group	Mean	SD	p-value
BMI	patients	20.4	2.4	0.005
	controls	22.7	2.6	
SCL-90-R				
somatization	patients	0.42	0.29	0.205
	controls	0.32	0.29	
obsessive-compulsive	patients	0.64	0.54	0.028
	controls	0.34	0.36	
interpersonal sensitivity	patients	0.53	0.45	0.034
	controls	0.30	0.39	
depression	patients	0.66	0.62	0.062
	controls	0.33	0.42	
anxiety	patients	0.41	0.32	0.006
	controls	0.19	0.22	
anger-hostility	patients	0.29	0.34	0.574
	controls	0.21	0.23	
phobic anxiety	patients	0.14	0.22	0.022
	controls	0.06	0.14	
paranoid ideation	patients	0.28	0.29	0.510
	controls	0.24	0.33	
psychoticism	patients	0.27	0.34	0.097
	controls	0.11	0.17	
total	patients	0.45	0.33	0.024
	controls	0.24	0.24	
HAMD				
depression	patients	4.7	6.6	0.002
	controls	1.2	3.4	
ANIS				
obsessive-compulsive traits	patients	9.94	4.93	0.015
	controls	6.77	4.18	
total	patients	28.00	17.88	0.082
	controls	19.10	14.46	

differences were just not significant ($p = 0.062$). The SCL-90-R subscales “somatization”, “anger-hostility”, “paranoid ideation”, and “psychoticism” did not significantly differ in patients and controls.

The course of psychometric scores within the 10-year follow-up is depicted in Fig. 1. Clinician-rated depression scores (HAMD) decreased from discharge until the 7-year follow-up (paired t-test: $p = 0.038$). Thereafter no significant changes occurred ($p = 0.80$). Scores of obsessive-compulsive traits (ANIS) did not change significantly between the 3-year and the 10-year follow-up ($p = 0.68$). Similarly, scores of the SCL-90-R scale “obsessive-compulsive” did not change between the 7-year and 10-year follow-up ($p = 0.78$). Scores of anxiety (SCL-90-R) tended to decrease between the 7-year and the 10-year follow-up although changes were not significant ($p = 0.25$).

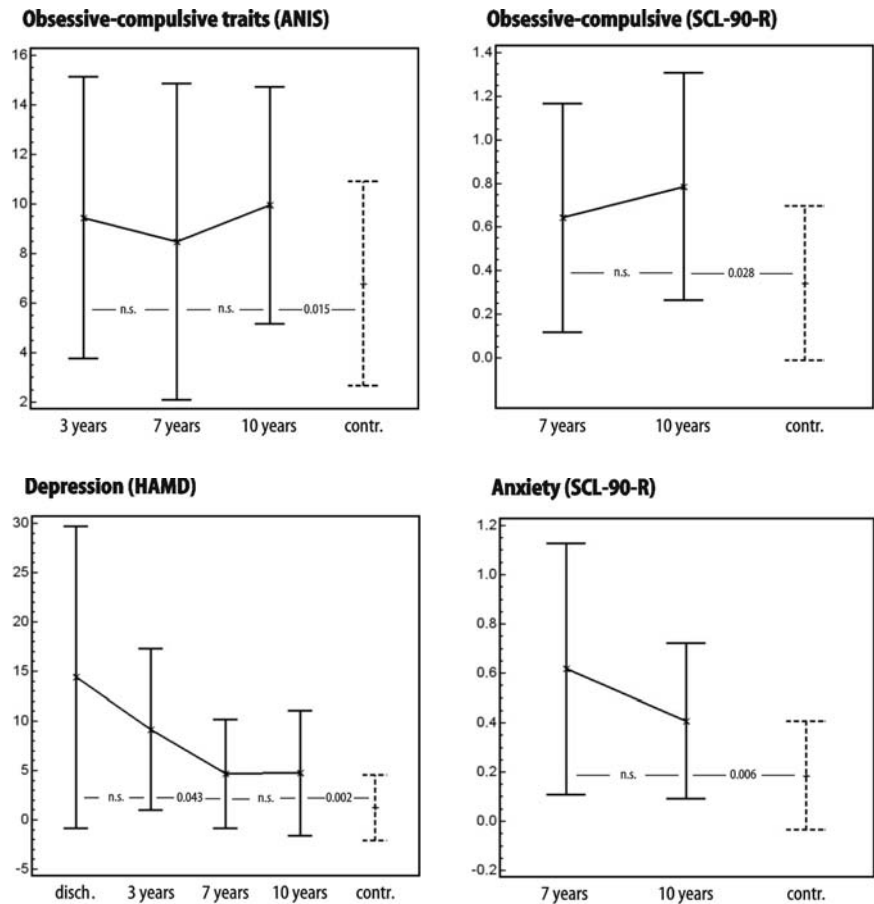
At the 3-year follow-up, former patients had a mean BMI of 19.4 ± 2.7 kg/m². At the 7-year follow-up, mean BMI was 19.8 ± 2.1 kg/m², and at the 10-year follow-up, mean BMI was 20.3 ± 2.5 kg/m².

Discussion

In the present study we could demonstrate that symptoms of depression and anxiety as well as obsessive-compulsive behavior persist even after more than 3 years of complete remission of anorexia nervosa and core eating disorder psychopathology. Most of these symptoms were very stable and did not change for several years of follow-up. In addition to higher scores on the SCL-90-R subscales “anxiety”, “phobic anxiety”, “obsessive-compulsive” former patients differed from controls in the SCL-90-R subscale “interpersonal sensitivity”. This scale focuses on feelings of inadequacy and inferiority, particularly in comparison with other people. Self-depreciation, self-doubt, and marked discomfort during interpersonal interactions are characteristic manifestations of this psychological dimension. Previous studies have shown that scores of “interpersonal sensitivity” are elevated in patients with mixed anxiety and depressive disorders and in subjects with social phobia and agoraphobia (Brown et al. 1989; Kennedy et al. 2001). In long-term follow-up studies of AN, many patients suffer from social phobia and other anxiety (for a review see Godart et al. 2002), as well as depressive disorders (Ivarsson et al. 2000; Wentz Nilsson et al. 2001) and anxious-avoidant personality disorder (Wentz Nilsson et al. 1999; Herpertz-Dahlmann et al. 2001). Thus, one may hypothesize that the SCL-90-R profile of our long-term recovered patients reflects anxious-avoidant, obsessional, and depressive personality traits in anorexia nervosa. Similar traits were identified in large multi-center studies of acute AN (Halimi et al. 2000; The Price Foundation Group 2001), as well as in family studies of AN (Lilenfeld et al. 1998; Grigoriou-Serbanescu et al. 2003; Mangweth et al. 2003).

Our study extends previous similar results of studies with cross-sectional data (e.g. Hsu et al. 1992). By our third follow-up assessment at 10 years, we were able to pursue the development of comorbid symptomatology. In contrast to earlier studies (O'Dwyer et al. 1996; Pollice et al. 1997), we could exclude effects of eating disorder symptoms on comorbid psychopathology. Long-term recovered patients as a group did not differ from controls with regard to psychiatric morbidity and psychosocial adaptation (Herpertz-Dahlmann et al. 2001), so our findings of increased rates of depressive, anxious, and obsessive-compulsive symptoms cannot be explained by current psychiatric disorders. Instead, our results support the hypothesis that a higher degree of depressive, anxious, and obsessive-compulsive features may be personality traits in subjects with former adolescent anorexia nervosa. These traits may contribute to weight loss and starvation, which in turn have shown to aggravate these symptoms (Pollice et al. 1997). Nevertheless, since we did not assess premorbid data our findings may also be secondary to semistarva-

Fig. 1 Course of obsessive-compulsive, depressive and anxious features during 10-year follow-up (Wilcoxon test) of 17 long-term recovered AN patients in comparison to 39 age-matched healthy controls (Mann-Whitney test)



tion and/or long duration of AN with isolation from peers and disturbances in the normal psychosocial development during adolescence. Another limitation of our study may be the small sample size. Further studies

including more subjects are required to substantiate our findings.

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