Clinical characteristics in patients with anorexia nervosa and obsessive–compulsive disorder

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ABSTRACT

Background. The purpose of this study was to assess clinical characteristics, including co-morbid personality disorders in patients with both anorexia nervosa (AN) and obsessive–compulsive disorder (OCD) in comparison with age- and sex-matched patients with OCD.

Methods. Fifty-three female patients with AN were divided into two groups based on the presence or absence of a current diagnosis of OCD, as assessed by the Structured Clinical Interview for DSM-III-R Patient version (SCID-P). Twenty-one women (40%) who met the DSM-III-R criteria for both AN and OCD were compared with 23 female patients with OCD, using the Yale-Brown Obsessive Compulsive Scale (Y-BOCS) and the SCID Axis II disorders.

Results. There were no significant differences on the mean Y-BOCS severity scores between these groups. However, AN patients with OCD were significantly more likely than OCD patients to have obsessions with need for symmetry or exactness and ordering/arranging compulsions, whereas both aggressive obsessions and checking compulsions tended to be more frequently identified in OCD patients compared with AN patients with OCD. AN patients with OCD were significantly more likely than OCD patients to meet the criteria for obsessive–compulsive personality disorder (OCPD).

Conclusions. These results suggest that there are some differential characteristics of the OCD symptomatology between these disorders, although many patients with AN manifest significant impairment from primary OCD symptoms with similar magnitude in severity to that found in OCD patients.

INTRODUCTION

Anorexia nervosa (AN) has been characterized by a distorted attitude towards weight and shape, a set of behaviours calculated to produce weight loss, and amenorrhoea among young females. Most AN patients have a marked diminution of food intake in an obsessive pursuit of thinness, along with an obvious body preoccupation and an incessant rumination about food. In addition, they are often engaged in compulsive calorie counting and excessive exercising. The personality of the anorexic has been characterized as stereotypically rigid, ritualistic, perfectionistic and meticulous. These clinical characteristics commonly observed among anorexic patients have stimulated many investigators to study the relationship between AN and obsessive–compulsive disorder (OCD) (Holden, 1990; Hsu et al. 1993). The description of AN as basically a manifestation of OCD was first made by Palmer & Jones (1939), and supported by recent investigators, such as Rothenberg (1986) who proposed evidence for this hypothesis in a review of 11 reported series of patients with AN, and called eating disorders (ED) ‘a modern obsessive–compulsive syndrome’.

While accepting that obsessional traits and symptoms are a prominent feature in AN, Garfinkel & Garner (1982) emphasized the role...
of severe starvation and weight loss in the genesis of these traits, and mentioned the possibility of these obsessional traits and symptoms existing as a secondary phenomena. It has also been discussed as to whether OCD-like symptoms related to core AN pathology fully meet the criteria of OCD (Holden, 1990; Kaye, 1993). Most patients with AN do not regard their obsessive-like symptoms including recurrent, persistent and intrusive thoughts about their body image and desire for thinness as senseless, and often they do not attempt to ignore or suppress these thoughts (Kaye, 1993). Similarly, core symptoms of AN have been characterized as ego-syntonic; those of OCD as ego-dystonic (Garfinkel & Garner, 1982; Holden, 1990; Kaye et al., 1992; Kaye, 1993). AN patients with these symptoms were also suggested to be different from those with OCD in that their compulsion-like behaviours, such as persistent exercising and ritualized eating behaviours, might not be designed to neutralize or prevent discomfort (Kaye, 1993). Thus, the issue of whether core anorexic symptoms are a variant of OCD remains controversial.

On the other hand, some studies on the axis I co-morbidity have suggested that 11% to 69% of AN patients have a current or lifetime OCD, even after excluding food and body-related obsession-like symptoms or ritualized eating behaviours (Solyom et al., 1982; Hudson et al., 1983; Halmi et al., 1991; Kaye et al., 1992; Hsu et al., 1993; Kaye, 1993; Braun et al., 1994). And studies on OCD have suggested that about 10% of the female patients with OCD had a history of ED (Piggot et al., 1991, 1994; Fahy et al., 1993). These studies indicate a close relationship between these disorders, and suggest that considerable numbers of patients with AN have OCD symptoms severe enough to qualify for a diagnosis of OCD. However, there have been few studies investigating the clinical characteristics related to primary OCD symptoms in AN patients, especially in the systematical comparison with those in OCD patients. To our knowledge, there is only one study, which was conducted by Bastiani et al., (1996).

The objectives for this study are: (1) to assess the prevalence of co-morbidity of OCD among Japanese patients with AN, distinguishing AN patients with OCD (AN+OCD) from those patients without OCD (AN−OCD); (2) to evaluate the characteristics of OCD symptomatology using the Yale-Brown Obsessive–Compulsive Scale (Y-BOCS) (Goodman et al. 1989a, b) in AN+OCD in comparison with age- and gender-matched patients with OCD (Pt+OCD); and (3) to compare clinical variables including co-morbidity of personality disorders between AN+OCD and Pt+OCD.

METHOD

Subjects

The subjects were 53 female patients with anorexia nervosa (AN) and 23 age-matched female patients with obsessive–compulsive disorder (Pt+OCD) diagnosed according to the DSM-III-R criteria (American Psychiatric Association, 1987). All anorexic patients also met the DSM-IV criteria for restricting AN, and all Pt+OCD met this criteria for OCD (American Psychiatric Association, 1994). All subjects were out-patients between the age of 18 and 33 years, and consecutively admitted to the Department of Neuropsychiatry at the Osaka City University Medical School Hospital between January, 1994 and March, 1997. After complete description of the study, written informed consent was obtained from each subject. AN subjects had not had an episode of binge eating, and had been symptomatic for at least 6 months (mean symptom duration of 3.9 years (range: 0.8–7.8 years)). Similarly, all Pt+OCD had been symptomatic for at least 1 year (mean symptom duration of 5.3 years (range: 1.0–9.0 years)). All Pt+OCD did not have a current diagnosis of any eating disorders (ED), but two (8.7%) of them had a past history of AN.

Assessment procedures

Each subject provided information regarding her demographic profile, family and medical history, and the clinical features related to her disorder. Global functioning was assessed using the DSM-III-R Axis V (Global Assessment of Functioning Scale: GAFS). The Manifest Anxiety Scale (MAS) (Taylor, 1953) and the Zung’s Self-rating Depression Scale (SDS) (Zung, 1965) were administered to all subjects for assessment of anxiety and depressive symptoms, respectively. Personality disorder (PD) assessment was concurrently performed on each subject, using the Japanese version of the Structured Clinical
Anorexia nervosa and obsessive–compulsive disorder

Interview for DSM-III-R Personality Disorders (SCID-II) (Spitzer et al. 1987). The acceptable reliabilities for each PD diagnosis obtained by the SCID-II Japanese version were previously described for patients with eating disorders (kappa value of 0.56-0.83; Matsunaga et al. 1998a), and for patients with OCD (kappa value of 0.55-1.0; Matsunaga et al. 1998b).

After these assessments, all AN subjects were interviewed for the evaluation of current and lifetime co-morbidity of OCD using the Japanese version of the Structured Clinical Interview for DSM-III-R Patient version (SCID-P) (Spitzer et al. 1987). This assessment was performed on each subject in a face-to-face interview by one of the authors who had been trained under the supervision of senior psychiatrists, according to the instructions of the developers (Goodman, 1989a,b). In the identification of current OCD symptoms in each patient, up to three primary obsessions and compulsions were listed using the Y-BOCS symptom checklist. Food and body-related obsession-like symptoms, or ritualized eating behaviours in AN patients were omitted from Y-BOCS scoring. The severity of OCD symptoms was assessed using the Y-BOCS severity rating scale. The severity section of the Y-BOCS is composed of 10 items, with five items for obsessions and five for compulsions, each of which is rated on 0-4 point scales representing ‘no symptoms’ to ‘extreme symptoms’. The 10 items of the Japanese version of the Y-BOCS have already been verified collectively to constitute a reliable instrument for assessing OCD symptom severity (Nakajima et al. 1995). The inter-rater reliability assessed by Pearson’s product moment correlation coefficients (r = 0.874-0.997, P < 0.01), intraclass correlation coefficients (ICCs) (r = 0.793-0.963, P < 0.0001) and internal consistency measured by Cronbach’s α coefficient (α = 0.889) were as good as those reported by the developers (Goodman et al. 1989a).

Statistical analysis

Two-tailed group t tests were used in the comparison of clinical features and psychometric test results between AN+OCD and AN−OCD, or between AN+OCD and Pt+OCD. The probabilities of co-occurrence of AN+OCD, AN−OCD and PD subtypes were analysed using chi-square tests and Yates’s correlation for 2x2 tables, or Fischer’s exact test where appropriate. This analysis was also used in a frequency comparison of OCD target symptoms and PD subtypes between AN+OCD and Pt+OCD. The significance level was set at P < 0.05.

RESULTS

There were no significant differences between AN+OCD and AN−OCD on the mean age, age of onset, duration of illness, years of education, or percentage of standard body weight (%SBW). AN+OCD had significantly lower GAFS scores (t = 4.88, df = 51, P < 0.0001) and significantly greater numbers of hospitalizations (t = 3.30, df = 51, P < 0.005) than AN−OCD. With regard to psychometric test results, AN+OCD had significantly higher mean scores on the MAS (t = 2.54, df = 51, P < 0.05) and the SDS (t = 2.81, df = 51, P < 0.01) than AN−OCD. Overall, 27 (50.9%) of all AN subjects met the criteria for at least one PD. AN+OCD were significantly more likely than AN−OCD to have any PD (71.4% v. 37.5%, χ² = 4.58, df = 1, P < 0.05). In the prevalence of each PD, obsessive–compulsive personality disorder (OCPD) was more frequently diagnosed in AN+OCD than AN−OCD (38.1% v. 9.4%, χ² = 4.76, df = 1,
$P < 0.05$). However, there were no significant differences between these groups in the prevalence of any other PD.

Table 1. Comparison of demographic profiles and clinical features between AN patients with OCD and patients with OCD

<table>
<thead>
<tr>
<th></th>
<th>AN+OCD $^1$ (N = 21)</th>
<th>OCD $^2$ (N = 23)</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean ± s.d.</td>
<td>Mean ± s.d.</td>
<td>$\chi^2$ (df = 42)</td>
</tr>
<tr>
<td>Age (years)</td>
<td>23.7 ± 3.6</td>
<td>25.7 ± 4.5</td>
<td>1.62</td>
</tr>
<tr>
<td>Age of onset (years)</td>
<td>19.7 ± 2.8</td>
<td>20.2 ± 4.8</td>
<td>0.40</td>
</tr>
<tr>
<td>Duration of illness (years)</td>
<td>38 ± 2.3</td>
<td>53 ± 2.6</td>
<td>2.07</td>
</tr>
<tr>
<td>Education</td>
<td>13.5 ± 2.3</td>
<td>13.4 ± 1.8</td>
<td>0.07</td>
</tr>
<tr>
<td>GAFS score $^3$</td>
<td>462.2 ± 8.2</td>
<td>546.6 ± 9.3</td>
<td>3.16</td>
</tr>
<tr>
<td>Single/married (numbers)</td>
<td>19/2</td>
<td>15/8</td>
<td>&lt; 0.007</td>
</tr>
<tr>
<td>Percentage of SBW $^4$</td>
<td>66.9 ± 8.1</td>
<td>92.2 ± 8.1</td>
<td>9.50</td>
</tr>
<tr>
<td>Numbers of admissions</td>
<td>1.9 ± 2.5</td>
<td>0 ± 0.5</td>
<td>3.08</td>
</tr>
</tbody>
</table>

1 Patients with anorexia nervosa and obsessive-compulsive disorder.
2 Patients with obsessive-compulsive disorder.
3 Global Assessment of Functioning Scale (Axis V).
4 Percentage of Standard Body Weight.

Group means of parametric variables were compared using two-tailed t tests.
* Fisher’s exact test.

Table 2. Comparison of obsessive and compulsive symptoms between AN patients with OCD and patients with OCD

<table>
<thead>
<tr>
<th></th>
<th>AN+OCD (N = 21)</th>
<th>OCD (N = 23)</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>$\chi^2$ (df = 1)</td>
</tr>
<tr>
<td>Obsession</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aggressive</td>
<td>4 (19%)</td>
<td>10 (43%)</td>
<td>1.99</td>
</tr>
<tr>
<td>Contamination</td>
<td>13 (61%)</td>
<td>16 (69%)</td>
<td>0.05</td>
</tr>
<tr>
<td>Sexual</td>
<td>1 (48)</td>
<td>1 (43)</td>
<td>0.00</td>
</tr>
<tr>
<td>Hoarding/saving</td>
<td>0 (0)</td>
<td>2 (87)</td>
<td>0.43</td>
</tr>
<tr>
<td>Religious</td>
<td>0 (0)</td>
<td>1 (43)</td>
<td>0.00</td>
</tr>
<tr>
<td>Need for symmetry, or exactness</td>
<td>14 (66%)</td>
<td>7 (30%)</td>
<td>4.42</td>
</tr>
<tr>
<td>Somatic</td>
<td>3 (143)</td>
<td>1 (43)</td>
<td>0.03</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>10 (476)</td>
<td>11 (478)</td>
<td>0.00</td>
</tr>
<tr>
<td>Compulsion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleaning/washing</td>
<td>12 (571)</td>
<td>13 (565)</td>
<td>0.00</td>
</tr>
<tr>
<td>Checking</td>
<td>7 (33%)</td>
<td>15 (652)</td>
<td>3.28</td>
</tr>
<tr>
<td>Repeating rituals</td>
<td>4 (19%)</td>
<td>7 (304)</td>
<td>0.27</td>
</tr>
<tr>
<td>Counting</td>
<td>4 (19%)</td>
<td>6 (261)</td>
<td>0.04</td>
</tr>
<tr>
<td>Ordering/arranging</td>
<td>13 (619)</td>
<td>5 (217)</td>
<td>5.76</td>
</tr>
<tr>
<td>Hoarding/collecting</td>
<td>0 (0)</td>
<td>1 (43)</td>
<td>0.00</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>6 (286)</td>
<td>5 (348)</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Values were expressed as numbers (%); comparisons are made using $\chi^2$ tests with 1 df and Yate’s correlation for discontinuity. Fisher’s exact test was used for factors with expected cell frequencies of $< 5$. 

Table 1 shows the comparison of demographic profiles and clinical features between AN + OCD and Pt + OCD. There were no significant differences between these groups for the mean age, age of onset and years of education. Pt + OCD were more likely than AN + OCD to have longer duration of illness ($t = 2.07$, df = 42, $P < 0.05$). AN + OCD had significantly lower GAFS scores ($t = 3.16$, df = 42, $P < 0.005$) and % SBW ($t = 9.50$, df = 42, $P < 0.0001$), and significantly greater numbers of hospitalizations ($t = 3.08$, df = 42, $P < 0.005$) than Pt + OCD.

Table 2 shows the specific categories of primary obsessions and compulsions in these groups. All subjects in both groups presented a mixture of obsessions and compulsions. When comparing the distribution of each obsessive or compulsive symptom between these groups, AN + OCD were significantly more likely than Pt + OCD to have obsessions with need for symmetry or exactness ($\chi^2 = 4.42$, df = 1, $P < 0.05$) and ordering/arranging compulsions ($\chi^2 = 5.76$, df = 1, $P < 0.05$). Both aggressive obsessions ($\chi^2 = 1.99$, df = 1, NS) and checking compulsions ($\chi^2 = 3.28$, df = 1, NS) tended to be more distributed in the Pt + OCD group compared with the AN + OCD group.

With respect to the severity scores of the Y-BOCS, all subjects in both groups reached the
minimum score of 16 or higher for clinically significant OCD symptoms. Pt + OCD tended to have higher mean scores compared with AN + OCD on total (± s.d.) (24.3 ± 3.1 v. 22.7 ± 3.1, t = 1.72, df = 42, NS) and on obsession (12.3 ± 1.7 v. 11.3 ± 2.1, t = 1.68, df = 42, NS) and compulsion (12.0 ± 1.5 v. 11.3 ± 1.1, t = 1.68, df = 42, NS) subtotals, but not significantly. Also, there were no significant differences between these groups in the mean scores both on MAS (AN + OCD, 27.9 ± 6.5; Pt + OCD, 26.5 ± 5.7) and SDS (AN + OCD, 58.1 ± 7.4; Pt + OCD, 53.8 ± 9.0).

The prevalence of personality disorders (PD) in each group is shown in Table 3. Overall, 15 (71.4%) of AN + OCD and 12 (52.2%) of Pt + OCD met the criteria for at least one PD. Among the three clusters of PD, the anxious–fearful (cluster C) PD, especially avoidant PD, were most frequently diagnosed in both groups. In the AN + OCD group, OCPD was also the most prevalent PD, followed by dependent PD. In the Pt + OCD group, on the other hand, borderline PD and dependent PD were the next most frequently diagnosed, followed by paranoid PD, schizotypal PD and OCPD. AN + OCD were significantly more likely than Pt + OCD to meet the criteria for OCPD ($\chi^2 = 3.86$, df = 1, $P < 0.05$). However, there were no other differences between these groups in the prevalence of PD.

**DISCUSSION**

In this study, 40% of our AN subjects met the criteria for current OCD, even after excluding the core obsessional symptoms typical of AN. We found no significant differences in the mean total, or obsession or compulsion subtotal scores on the Y-BOCS between AN + OCD and Pt + OCD. There are a few studies that have systematically examined whether AN patients have primary obsessions or compulsions, when the core symptoms of AN are excluded. Kaye et al. (1992) reported that 19 unmedicated AN patients had significantly elevated scores on the Y-BOCS (mean ± s.d. = 22 ± 5) compared with matched healthy volunteer women, after excluding core anorexic symptoms, such as disturbances of body image, feeding, and exercise. Thiel et al. (1995) found that 37% of their 93 patients with AN or bulimia nervosa (BN) met the DSM-III-R criteria for OCD on the basis of symptoms not related to dieting and body image. Bastiani et al. (1996), who performed a systematic comparison of OCD symptomatology of 18 female patients with AN and 16 female patients with OCD using the Y-BOCS, suggested that AN patients had similar functional impairment from primary OCD symptoms as indicated by their total Y-BOCS (mean ± s.d. = 19 ± 9) to that of OCD patients (mean ± s.d. = 22 ± 6). These findings support our re-
results, suggesting that patients with active AN often manifest significant impairment from primary obsessive or compulsive symptoms with similar magnitude in severity to that of OCD patients.

With regard to OCD symptomatology among patients with OCD, checking compulsions usually accompanied by pathological doubting, and washing compulsions usually accompanied by contamination fears have been reported to be the most common symptoms in the Western world (Rasmussen & Elsen, 1992; Foa & Kozak, 1995; Tallis, 1995), as well as in Japan (Honjo et al., 1989; Matsunaga et al. 1998b). Thus, OCD symptoms among OCD subjects are considered to be similar across culture (Greenberg & Witztum, 1994). This is consistent with our Pt+OCD in spite of age- and gender-limitations in this study. Leckman et al. (1997) examined the correlational relationships of the OCD symptoms in the Y-BOCS symptom checklist using a principal-components factor analysis, suggesting the existence of four factors; (1) obsessions (aggressive, somatic, sexual and religious) and checking; (2) symmetry and ordering; (3) cleanliness and washing; and (4) hoarding. When their set of four symptom dimensions is applied to the OCD symptoms of our AN+OCD, ‘symmetry and ordering’ is the most common dimension, followed by ‘cleanliness and washing’ dimension. On the other hand ‘obsessions and checking’ dimension, along with ‘cleanliness and washing’ dimension, are most commonly identified in Pt+OCD. Thus, the OCD symptoms in AN+OCD were more likely to concentrate on two of the four dimensions, such as ‘symmetry and ordering’ and ‘cleanliness and washing’, compared with Pt+OCD exhibiting a wider variety of symptoms, except for the ‘hoarding’ dimension. The elevated frequencies of ‘symmetry and ordering’ and ‘cleanliness and washing’ in our AN+OCD are supported by previous studies (Rothenberg, 1986; Kaye et al. 1992). Bastiani et al. (1996) characterized OCD symptomatology in their anorexic patients as having a tendency to endorse mostly symptoms related to ‘symmetry and order’, comparing OCD patients who endorsed a wide variety of obsessions and compulsions. Taken together, the OCD symptomatology of AN patients, which can be characterized differentially from that of OCD patients, are rather stable cross culturally, as reported in patients with OCD.

When taking into account a significantly elevated prevalence of obsessive–compulsive personality disorder (OCPD) in AN+OCD than Pt+OCD in this study, there may be an essential difference between AN and OCD in the association with OCPD. A close association between obsessional personality and AN has been well described, even in the recovered anorexics (Strober, 1980; Holden, 1990; Srinivasagam et al. 1995; Pollice et al. 1997). Studies on co-morbid personality disorders (PD) among AN patients revealed that OCPD is one of the most common PD, with a reported prevalence ranging from 17% to 60% (Gartner et al. 1989; Wonderlich et al. 1990; Braun et al. 1994). Although compulsiveness is considered to be more common in Japanese compared with Westerners (Derkesen, 1995), co-morbidity of OCPD in AN patients in Japan was identified as being essentially the same as that reported in the Western world (Matsunaga et al. 1998a). An elevated obsessional personality is suggested to have a causal significance on developing OCD symptoms in AN patients (Strober, 1980; Kaye, 1993). And recent studies indicated the possibility that obsessive traits of temperament and personality, which is expressive of OCPD and an obsessive concern with symmetry, exactness and perfectionism, might be related to an underlying biological diathesis that places someone at risk for developing AN (Kaye, 1993, 1997; Srinivasagam et al. 1995).

On the other hand, although the majority of OCD patients are suggested to meet criteria for at least one PD, relatively lower rates of co-morbid OCPD (6–28%) have been identified (Baer et al. 1990, 1992; Black et al. 1993; Matsunaga et al. 1998b). A somewhat lower prevalence of OCPD in our OCD patients (8.7%) may be due to the gender limitation in this study; men have been reported to be more likely than women to meet criteria for OCPD (Golomb et al. 1995). Thus, OCPD has been considered to be less frequently occurring in OCD patients than that expected from psychodynamically orientated theories of OCD, and may not be a necessary condition for the development of OCD (Piggott et al. 1994). And a research in this area suggests the relationship between OCD and OCPD may best be under-
stood as independent, yet an interrelated phenomena (Pollack, 1987). Taken together, in contrast to an association with OCPD in OCD patients, OCPD in AN patients may have a causal significance on a development of their OCD symptoms. And a more close linkage with OCPD, as well as a significantly elevated prevalence of an obsessive concern with symmetry and exactness, and an ordering or arranging compulsion in AN patients, compared with OCD patients, can be characterized as transcultural phenomena which may represent their vulnerability for developing AN. However, in this cross-sectional study, we could not assess the causality relationship between AN and OCD. Another limitation of this study was the number of subjects, as the chi-square test has been found to be affected by sample size (Marsh et al. 1988). Therefore, further follow-up studies are required to clarify the essential relationship between these disorders.

Finally, our AN + OCD showed significantly lower GAFS scores, greater numbers of hospitalizations, greater severity of depressive or anxious status than AN – OCD, in spite of no differences between these groups in the duration of illness, % SBW, or the prevalence of any PD except for OCPD. Taking into account a close linkage between OCD and OCPD in AN patients, these findings raise the possibility that a difficulty of social adaptation and a general psychopathology, such as depressive or anxious status in AN patients, may be further strengthened by the co-morbid OCD and/or OCPD rather than AN per se. Our AN + OCD were also significantly more likely than Pt + OCD to have a greater degree of social maladaptation as assessed by the GAFS, in spite of no significant differences in the severity of OCD symptoms between these groups. Among studies on OCD, OCPD has been suggested neither to be closely related to OCD severity, nor to be identified as a predictor of poorer outcome (Baer et al. 1992; Pigott et al. 1994). Taken together, as one of the differential characteristics of AN from OCD, it can be hypothesized that co-morbidity of OCD and/or OCPD in AN patients may exaggerate the severity of various clinical features, such as generalized psychosocial problems. However, these days concomitant OCD has been suggested not to be an indicator of a significantly poorer prognosis for AN. (Thiel et al. 1998). Therefore, this hypothesis should be assured in further research on this issue, including longitudinal follow-up studies.

In conclusion, considerable numbers of AN patients manifest significant impairment from primary OCD symptoms, like patients with OCD. And the OCD symptomatology in AN patients may be rather stable cross-culturally, as reported in OCD patients. However, there are some differential characteristics of OCD symptomatology, and an association with OCPD between AN and OCD. Especially, a close linkage between OCPD and OCD in AN patients may represent a causal significance of OCPD on their OCD symptoms. In this study, we could not assess the causality relationship between AN and OCD. Further follow-up studies are needed to clarify the essential relationship between these disorders.

REFERENCES


