Comorbidity of Eating Disorders among Patients with Bipolar Disorders

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Background: Associations between Eating Disorders (ED) and affective disorders have often been suggested in several epidemiological studies. There is a need to elucidate such comorbidity, as it can cause many risks to the patient. These risks can not only cause the patient to suffer further with bipolar disorder, but they can also do damage to the body and eventually prove fatal if left untreated. This study aimed to detect Eating Disorders (DD) among patients with Bipolar Disorder (BPD).

Methods: The study was performed on two groups of females, the first composed of 30 female patients with BPD and the second is composed of 15 healthy controls. Clinical psychiatric examination and Psychometric evaluation using Barcelona Bipolar Eating Disorder (BEDS). The scale helps to quantify disordered eating behaviour in bipolar patients.

Results: The mean scores of BEDS were significantly higher in patients with BPD than controls. ED were found in 65.9% of patients with BPD, and the most prevalent disorder was binge eating disorder. There were relations between studied parameters (Type of BPD, age of onset of BPD, race, family history of BPD, and use of medication) and ED, but none reached statistical significance.

Conclusion: In conclusion, eating disorders were common comorbid conditions found among bipolar patients. BEDS was a useful screening tool to diagnose ED among bipolar patients. Addressing comorbid ED in the management plan of bipolar patients would help in improving their quality of life and decreasing the risk of morbidity and mortality associated with comorbid ED.

Keywords: Eating disorders, Dysfunctional eating behaviors, Binge eating disorder, Comorbidity, Bipolar disorder, Barcelona Bipoler Eating Disorder Scale.

INTRODUCTION

Bipolar disorder (BPD) is associated with high rate of psychiatric comorbidity. In the US National Comorbidity Survey, the prevalence of axis I disorders among patients with bipolar I was 100% (Kessler, et al. 1999). Associations between Eating Disorders (ED) and affective disorders have often been suggested in several epidemiological studies (Simpson, et al. 1992; Kaye, et al. 1992; Vieta, et al. 2000).

More than 10% of bipolar patients have eating disorders, conversely in patients with anorexia or bulimia, the lifetime prevalence of BPD is between 4% and 6%, versus 1.5-2.5% in the general population (Hudson, et al. 1987). Seasonal variations in food intake, including carbohydrates craving during winter depressions, are common in bipolar II disorder, and affect women four times as often as men (Wehr and Rosenthal, 1989).

Binge eating is also common, being reported by as many as 38% of bipolar patients (Kruger, et al. 1996). Moreover, BPD is associated with both obesity (21-32%) and overweight (58%) (Elmslie, et al. 2000; Elmslie, et al. 2001; Fagiolini, et al. 2002).

Little study has been conducted on clarification and understanding of the nature of this comorbidity. Kraemer et al. have outlined three principal etiological mechanisms that attempt to explain why two disorders co-occur in the same individual. The first model infers a direct causal relationship in which the existence of one disorder leads to the development of the other. The second model infers an indirect causal relationship, in which one disorder affects a third variable that in turn...
leads to the development of the second condition. The third model infers no causal relationship but postulates that a presence of common risk factors may lead to the development of both conditions (McElroy, et al. 2002). Researchers believe that bipolar disorder patients find eating to be a coping mechanism for their illness. Medications can also trigger feelings of hunger as a side effect for some patients (Allison and Casey, 2001; Chengappa, et al. 2002).

Eating disorders with bipolar can cause many risks to the patient. These risks can diminish patients’ quality of life and reduce longevity (Allison and Casey, 2001; Chengappa, et al. 2002). That is why it is crucial to identify repeated eating behaviors among bipolar patients, and address them in the management plans of bipolar patients. We hypothesized that ED are prevalent among bipolar patients and Barcelona Bipolar Eating Disorder Scale (BEDS) (Torrent, et al. 2002; Vieta, 2005) would be a helpful screening tool in diagnosing these abnormal eating behaviours.

AIM OF THE WORK

The aim of this work was to assess different disordered eating behaviors among patients with bipolar disorders.

SUBJECTS AND METHODS

Subjects:

The study was carried out on two groups:

Group I: 30 female bipolar patients. They were recruited as they followed up in a private psychiatric center in Riyadh, Saudi Arabia. The first 30 bipolar patients who agreed to participate in the study were taken as the studied sample.

Group II: 15 female normal subjects, matched for age, were recruited as a control group. They were taken from the polyclinic staff.

Inclusion criteria:
1. Age: 16-60 years.
2. Sex: females.
3. Diagnosis of bipolar disorders in group participants, providing that all patients were in a remission status.
4. Patients consents: An informed and written consent asked from the patients before participating.

Exclusion criteria:
1. Chronic debilitating diseases.
2. Organic disorders associated with eating complaints.
3. Psychiatric co-morbidities.

Methods:
1. History.
2. Physical and neurological examination.
4. Psychometric evaluation using Barcelona Bipolar Eating Disorder (BEDS). The scale helps to quantify disordered eating behaviour in bipolar patients. It rapidly evaluates both severity and frequency of maladaptive eating behaviours (Elmslie, et al. 2000). It is a simple, 10-item, self-administered 0-3 likert–scale allowing for a maximum score of 30. BEDS explores disturbed eating patterns; regularity of eating, influence of mood states on eating patterns, binge eating and night eating, influence of fullness on eating, compulsive eating, and carbohydrate craving. The clinical cut-off score was estimated to be 13, patients scoring above 13 may require individualized intervention to evaluate and manage their eating disturbances (Torrent, et al. 2004; Vieta, 2005). The scale was translated to the Arabic language and a jury of three professionals (Two psychiatrists, and one university lecturer of Arabic language) revised the translated format and approved its usage in saudian culture.

RESULTS

The study was carried out on two groups; a Studied group (SG) and a Control group (CG). The SG was composed of 30 females with a mean age of 34.5±6.7 years, while the CG was composed of 15 females with a mean age of 33.3±11.9 years. Both groups matched for age (T-test=0.35, p=0.73). (Table 1)

| Table 1: Mean age among SG and CG and the mean age onset of bipolar illness: |
|-----------------|-----------------|---------------|---------|
| Age             | Mean            | SD            | T-test  | Sig   |
| Studied group   | 34.482          | 9.9629        | 0.346   | 0.731 |
| Control group   | 33.2857         | 11.9191       |         |       |
| Age of onset    | Studied group   | 20.6207       | 3.0985  |       |
|                 | Control group   |               |         |       |

*Level of significance is p ≤ 0.05.

Patients Data in the SG: Regarding bipolar diagnosis, 23 (75.9%) patients were diagnosed as having bipolar I disorder and seven (24.1%) patients were diagnosed with bipolar II disorder (Figure 1). The mean age of onset of the illness was 20.6±3.1 years (Table 1). Positive family history was found in twelve (39.6%) patients (Figure 2). Also, three (6.9%) patients had a Caucasian race and 27 (93.1%) patients were non-Caucasians (Figure 3). Twenty two (72.8%) of the patients used multiple medications; a combination mood stabilizers, antidepressants and major tranquilizers, while eight (26.4%) patients used monotherapy in the form of either mood stabilizers or atypical antipsychotics (Figure 4).
Assessment of Eating Disorders: Psychiatric examination using the DSM-IV-TR diagnostic criteria of the participants revealed the presence of a comorbid eating disorder in twenty three (75.9%) of patients while seven (24.1%) patients had no diagnosable eating disorder. The eating disorders were found in the following order of frequency; Binge eating Disorder (31%), obesity (20.7%), eating disorder not otherwise specified (13.8%), bulimia nervosa (10.3%), (Figure 5).

**Assessment of ED by BEDS:** By application of BEDS, the mean values were 18.9±6.7 in the SG and 7.9±2.2 in the CG. There was a statistical significant difference between both groups regarding BEDS mean values. (T-test=5.9, p=0.00). (Table 2)
Table 2: The mean values of BEDS in SG and CG and its correlation to family history, race, type of BPD, and drug use:

<table>
<thead>
<tr>
<th>BEDS</th>
<th>Pt.of comparison</th>
<th>Mean</th>
<th>SD</th>
<th>T-test</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>SG</td>
<td></td>
<td>18.9655</td>
<td>6.6788</td>
<td>5.955</td>
<td>0.000</td>
</tr>
<tr>
<td>CG</td>
<td></td>
<td>7.9286</td>
<td>2.2001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative FH</td>
<td></td>
<td>20.1176</td>
<td>6.5943</td>
<td>1.110</td>
<td>0.277</td>
</tr>
<tr>
<td>Positive FH</td>
<td></td>
<td>17.3333</td>
<td>6.7330</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td></td>
<td>23.5000</td>
<td>0.7071</td>
<td>-0.995</td>
<td>0.329</td>
</tr>
<tr>
<td>Non-Cauc</td>
<td></td>
<td>18.6296</td>
<td>6.8058</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BPD I</td>
<td></td>
<td>18.0455</td>
<td>6.3432</td>
<td>-1.333</td>
<td>0.194</td>
</tr>
<tr>
<td>BPD II</td>
<td></td>
<td>21.8571</td>
<td>7.3808</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single DU</td>
<td></td>
<td>19.2500</td>
<td>7.3241</td>
<td>0.139</td>
<td>0.890</td>
</tr>
<tr>
<td>Multiple DU</td>
<td></td>
<td>18.8571</td>
<td>6.6052</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Level of significance is p ≤ 0.05.

**Correlative study:** We tried to correlate some of the patient's data to the mean values of BEDS. The age of the patients in the SG and their age of onset of the BPD correlated positively with BEDS being 0.28 and 0.19 respectively, however neither reached statistical significance. (Table 3)

Table 3: Correlation between the mean value of BEDS and the mean age of the SG and the mean age of onset of BPD:

<table>
<thead>
<tr>
<th>BEDS</th>
<th>age</th>
<th>0.28</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Age of onset</td>
<td>0.19</td>
</tr>
</tbody>
</table>

On correlating the different comorbid ED with mean values for BEDS, there was statistical significant relation (F-test=21.3, p=0.00). Postcomparison test using Scheffe test found that patients with obesity related to BEDS mean values than patients with bulimia nervosa, also the latter patients related more to BEDS mean values than patients with binge eating disorder. (Table 4)

Table 4: Correlation between the ED diagnoses and the mean values of BEDS:

<table>
<thead>
<tr>
<th>dx-1</th>
<th>Mean</th>
<th>SD</th>
<th>F-test</th>
<th>Sig.</th>
<th>Postcomp Scheffe test</th>
</tr>
</thead>
<tbody>
<tr>
<td>obesity</td>
<td>25.00</td>
<td>3.10</td>
<td>21.278</td>
<td>0.00</td>
<td>3-1</td>
</tr>
<tr>
<td>bed</td>
<td>22.00</td>
<td>4.12</td>
<td></td>
<td></td>
<td>3-2</td>
</tr>
<tr>
<td>BN</td>
<td>22.00</td>
<td>4.58</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>nos</td>
<td>17.50</td>
<td>0.58</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

*Level of significance is p ≤ 0.05.

Patients who had a negative family history, Caucasian race, BPD II, and used prophylactic monotherapy had higher mean values on BEDS; 20.1±6.6, 23.5±0.71, 21.9±7.3, and 19.3±7.3 respectively. However, none of the relations reached a statistical significance.

**DISCUSSION**

Eating disorders in patients with bipolar disorder have been underappreciated and poorly studied within the traditional diagnostic systems in mental illness. Even when they are recognized, there is often unsubstantiated optimism that eating-related symptoms will disappear as psychosis abates. There is a need to elucidate such comorbidity, as it can cause many risks to the patient. These risks can not only cause the patient to suffer further with bipolar disorder, but they can also do damage to the body and eventually prove fatal if left untreated.

In the present study, 23 (75.9%) patients had an additional diagnosis of ED compared to seven (24.1%) patients in the studied group. The studied group scored statistically significant higher mean values on BEDS compared to the control group (T-test=5.9, p=0.00). Lower rates were found among normal population; in their lifetime, an estimated 0.5 percent to 3.7 percent of females suffer from anorexia and an estimated 1.1 percent to 4.2 percent suffer from bulimia. Between 3 and 5 percent of all adolescent females have a diagnosable eating disorder. However, our findings came in agreement to studies in the literature pointing out the association of ED with BPD (18-24).

According to one study, about of 25.5% of bipolar disorder patients have some kind of eating disorder. Other studies associated depressive symptoms with eating disorders (Hatsukami, et al. 1984; Swift, et al. 1986). A prior cross-sectional study found the presence of affective illness in acutely ill patients with eating disorders (Altshuler and Weiner, 1985). Cantwell, et al. (1977) found that 44% of individuals previously hospitalized with anorexia nervosa met the Feighner criteria for an affective disorder at follow-up (Mean=4.9 years). Simpson, et al. (1992), examined the association between affective disorders and eating disorders in 22 eating disorder inpatients who were interviewed using the Schedule for Affective Disorders and Schizophrenia-Lifetime Version. The first series of 11 were interviewed as part of an interrater reliability study; the second series, done as follow-up to the first, consisted of 11 consecutive admissions. They found 15 bulimics and seven anorexics. Nineteen patients had a major affective disorder, and 13 (59%) had bipolar II affective disorder (Musselman, et al. 1998). They Bipolar II affective disorder appears to be a common finding in hospitalized patients with severe persistent eating disorders.

McElroy, et al. (2001), assessed comorbid lifetime and current axis I disorders in 288 patients with bipolar disorder and the relationships of these comorbid disorders to selected demographic and historical illness
variables. They evaluated 288 outpatients with bipolar I or II disorder, using structured diagnostic interviews and clinician administered and self-rated questionnaires to determine the diagnosis of bipolar disorder, comorbid axis I disorder diagnoses, and demographic and historical illness characteristics. They found that one hundred eighty-seven (65%) of the patients with bipolar disorder also met DSM-IV criteria for at least one comorbid lifetime axis I disorder. More patients had comorbid anxiety disorders (N=78,42%) and substance use disorders (N=78, 42%) than had eating disorders (N=9, 5%) (McElroy, et al. 2001). Kalarchian, et al. (2007), studied psychiatric disorders among candidates for weight loss surgery and examined the relationship of psychopathology to degree of obesity and functional health status. They concluded that lifetime prevalence of mood, anxiety, and substance disorders was 45.5%, 37.5%, and 32.6% among bariatric surgery candidates may be compared with prevalence estimates of 20.8%, 28.8%, and 14.6%, respectively, as reported in a nationally representative sample from the National Comorbidity Survey, and that their finding replicated the growing body of research linking mood, eating and weight problems (Kalarchian, et al. 2007).

The coexistence of eating disturbance and psychosis is not a new phenomenon; in fact, it has been observed by many clinicians over the years. (Kraepelin, 2002; Bleuler, 1924) described disorganized and uncontrolled food intake as being characteristic of schizophrenia. (Bruch, 1966) on the other hand, suggested that overeating in schizophrenia is an adaptive defense against stress, used for the maintenance of self-control. It was explained that eating was more than just food intake; eating played an important role in our social interactions, and it could also be used to alter emotional states, and even to influence brain function. Serotonin was a neurotransmitter that played an important role in the regulation of circadian and seasonal rhythms, the control of food intake, sexual behaviour, pain, aggression, and the mediation of mood. Dysfunction of the serotonergic system has been found in a wide array of psychiatric disorders, like mood and eating disorders and this may be a common pathophysiological pathway for the comorbidity (Musselman, et al. 1998).

It has been suggested that eating disorders in psychoses would be caused by biological, physiological, and cognitive processes. Recent molecular examinations have assumed biologic differences in hunger, satiation, and satiety mechanisms in schizophrenia and have focused on metabolic signals. The assumption in most is that the homeostatic signals are offset by the psychotic process or by psychotropic medications. But this assumption is challenged by the heterogeneous patterns of weight and energy consumption changes observed in patients with identical diagnoses and medications. The hypothalamic sum of physiologic feeding signals can easily be overridden by cortical signals related to emotions and environments. The salience of the motivation to eat; whether this actually results in enough drive to lead to active seeking of food; factors involved in eating termination; the actual hedonic value of the food; and how that changes future expectations of food reward and determines future feeding behaviours are all big chunks of the missing picture. Such cognitive processes may account in part for the individual variability in changes of food intake and body weight associated with the illness and its medications (Yum, 2005; Yum, et al. 2006).

The current work found the following types of ED in the studied group, in order of frequency; Binge Eating Disorder (N=10, 31%), Obesity (N=6,20.7%), Eating Disorder not otherwise specified (N=4,13.8%), and Bulimia Nervosa (N=3,10.3%).Our findings were similar to (Kuehnel, 1998) who stated that the most common eating disorders associated with bipolar disorder are binge eating disorder (BED). The author described that most bipolar disorder patients develop binge eating disorder with their first episode of bipolar disorder. Episodes of mania or depression are the peak times for binge eating disorder (Kuehnel, 1998).

In congruence with our work, (Kruger, et al. 1996), examined the prevalence of binge eating disorder (BED), partial binge eating syndrome, and night binge eating syndrome in sixty-one subjects in whom BD was established using DSM-III-R criteria received a semistructured clinical interview including a detailed description of binge eating behaviour and of night binge eating. They found eight subjects (13%) met DSM-IV criteria for the diagnosis of BED. An additional 15 subjects (25%) exhibited a partial binge eating syndrome. These two otherwise identical groups of binge eaters were separated only by the DSM-IV frequency criterion. The rates found were higher than rates found in community samples. Ten subjects reported night binge eating in addition to their usual binge eating behaviour. This occurred consistently between 2:00 and 4:00 a.m. This behaviour was thought this to be of significance in the bipolar population because the early morning hours are also the time in which mood switches are reported to occur in subjects with bipolar disorder. They concluded that possible underlying mechanisms for the high frequency of binge eating among bipolar subjects found, involved a model of serotonin-mediated self-modulation of mood (Kruger, et al. 1996).

Our work showed no statistical significance between the mean values of BEDS and type of BPD, age of onset of BPD, race of the patients, family history of BPD, and the use of multiple or single drugs in treatment. Our results replicated the findings of (McElroy, et al. 2001), as they found no differences in comorbidity between patients with bipolar I and bipolar II disorder (McElroy, et al. 2001). On the contrary, the same authors found in their study that axis I comorbidity may be associated with an earlier age at onset among bipolar patients (McElroy, et al. 2001). The discrepancy may be due to
different methodology, sample size, and also, our study was concerned with comorbidity of ED among bipolar patients specifically, while the other study investigated the comorbidity of ED, anxiety disorders, and substance use in BPD patients (McElroy, et al. 2001).

CONCLUSION

Eating disorders are common comorbid conditions found among bipolar patients. BEDS is a useful screening tool to diagnose ED among bipolar patients. ED comorbidity had no significant relation with type of BPD, age of onset, family history of BPD, and medication used. There is a need to investigate the possible etiological factors leading to such comorbidity. Finally, addressing comorbid ED in the management plan of bipolar patients would help in improving their quality of life and decreasing the risk of morbidity and mortality associated with comorbid ED.

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REFERENCES


التوصيف العربي

توجد اضطرابات الأكل عند مرضى مصابون باضطراب ثنائي القطبين

طارق كمال ملوكية، وسهى إبراهيم

أستاذ مساعد الطب النفسي - كلية الطب - جامعة الإسكندرية، مدرس الطب النفسي - كلية الطب - جامعة الإسكندرية

تم ذكر العلاقة بين الاضطرابات الوجدانية واضطرابات الأكل بشكل عام في دراسات متعددة ولذلك هدف هذا البحث لتوضيح التلازم بين الاضطرابات لتجنب المخاطر التي قد تنجم عن تواجههما مع مرضى واضطرابات الأكل وناجحًا. أجرى البحث على مجموعتين من السيدات:

المجموعة الأولى مكونة من مرضى ثنائي القطبين والمجموعة الثانية كانت مجموعة طانية مكونة من سيدات أصحاء. تم إجراء الفحص النفسي وتطبيق مقياس بارشلونة لقياس اضطرابات الأكل في مرضى ثنائي القطبين. وجد أن اضطرابات الأكل كانت في المجموعة الأولى مقارنة بالمجموعة الطابة وتوجدت

استقرار مؤشرات الوضع النفسي وضع تحسن جودة المعيشة.