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Features of mood associated with high body weight in females with fibromyalgia

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Abstract

Background: Fibromyalgia (FM) is a common syndrome whose main characteristic is chronic widespread musculoskeletal pain, the severity of which is frequently worsened by concomitant obesity. Major depression (MD), particularly as part of a bipolar spectrum disorder (BSD), is associated with both obesity and FM.
Objective: To evaluate the relationship between lifetime MD, hypomanic symptoms and the body mass index (BMI) in patients with FM.
Method: Of the 115 patients originally screened, 87 women with FM finally entered the study. Forty-nine patients (57%) had a lifetime diagnosis of MD, assessed by a structured clinical interview based on DSM-IV criteria, and four of them (4.6%) had a current MD episode. Lifetime hypomanic symptoms were measured by means of the self-rated Hypomania Checklist. According to the international criteria for BMI, FM patients were classified as under/normal-weight (61%), overweight (30%) and obese (9%).
Results: 62 patients (71.2%) with FM had a bipolar spectrum disorder (BSD). Thirty (48.3%) of them met criteria for bipolar II disorder, 32 (51,6%) for bipolar disorder NOS (18 FM patients with MD associated to sub-syndromal hypomanic syndrome and 14 with hypomanic syndrome without MD). No patient had a bipolar I disorder. Only one patient met the criteria for a major depressive disorder (MDD). There was no significant difference in mean BMI between the patients with and without a lifetime diagnosis of MD, but there was a positive association between the level of hypomanic symptoms and BMI values ($p < 0.009$). When hypomania was considered categorically as hypomanic syndrome there was no significant effect on BMI.
Conclusions: Our finding adds to previous evidence indicating that hypomanic symptoms are a central feature of FM. In the case of the early identification of high-level hypomanic symptoms, body weight should be closely monitored in order to prevent obesity and its detrimental impact on females with FM.

1. Introduction

Fibromyalgia (FM) is a disorder of unknown origin that is characterised by widespread pain, fatigue, poor sleep and cognitive impairment, and is associated with depression and bipolar spectrum mood disorder [1].

Over the last ten years, accumulating evidence has suggested that there is a relationship between a high body mass index (BMI, measured as weight in kilograms divided by height in metres squared), pain [2–4] and pain-related syndromes, particularly FM [5]. The findings of a community-based twin registry have shown that overweight (BMI > 25 but < 30 kg/m^2) and obese twins (BMI > 30 kg/m^2) were more likely to report low back, abdominal and chronic widespread pain, headache, and FM than their normal-weight twins [6].

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The co-existence of a high BMI and FM has been demonstrated in various clinical settings. An Internet-based survey of >2500 FM patients [7] found that 27% were overweight and 43% obese. The prevalence of overweight/obesity (61%) among women with FM referred to a rheumatology clinic was clearly higher than in the general population (38%) in 2002 [5], and more recent studies have observed similar or even higher prevalence rates of over-weight (21–28%) and obesity (45–50%) [8,9]. In addition to this epidemiological evidence, there is a relationship between obesity and the clinical and biological aspects of FM. In clinical terms, BMI seems to correlate positively with disability [5], physical dysfunctioning, tender point counts [8], pain sensitivity and sleep disturbances [10], and negatively with the quality of life, the tenderness threshold [8], and physical strength and flexibility [10]. Biologically, high levels of inflammatory mediators have been observed in subjects with obesity [11]. In patients with FM, studies on inflammatory markers [12], in particular cytokine levels, yielded inconsistent results. However a systematic and quantitative review concluded that FMS patients had higher plasma levels of the pro-inflammatory cytokine interleukin (IL)-6 compared to control [13]. Finally, in patients with FM, a higher BMI is associated with higher levels of interleukin-6 (IL-6) and C-reactive protein (CRP), as well as the stress indicators epinephrine and cortisol [9].

Obesity has negative effects on the clinical and biological indices of FM, whereas it has been observed that weight loss in overweight and obese women improves FM symptoms, pain interference, body satisfaction, and the quality of life [14]. In line with this, patients with FM who lose weight have significantly lower tender point counts, fewer and less severe depressive symptoms, and higher sleep quality scores, and significantly lower IL-6 and CRP levels than those who do not lose weight [15].

The mechanisms underlying the relationship between high BMI values and FM are not fully understood. It has been hypothesised that reduced physical activity due to musculo-skeletal pain may lead to an increased BMI or, considering the inverse relationship between obesity and pain, that a higher BMI may cause pain as a result of increased strain on joints. Other possible explanations are that obesity and FM share alterations in endocrine function, opioid systems and inflammatory pathways [9] that may affect pain sensitivity [16].

Psychological and/or psychiatric conditions may also contribute to the relationship between obesity and FM. A number of studies have demonstrated the frequent concomitance of FM and depression, with lifetime MD rates ranging from 20% to 86% [17–19], and recent investigations [1] strongly suggest an association between FM and bipolar spectrum disorder (primarily bipolar II) in which MD is associated with hypomanic syndrome or, on the basis of the broader Zurich diagnostic criteria [20], even only a sub-syndromal hypomanic episode.

It has also been clearly established that there is a relationship between obesity and depressive [21] and bipolar disorders [22]. Bipolar patients, including those who are drug naïve [23], weight significantly more than normal controls [24,25] and are four times more likely to be overweight or obese [26]. The above findings suggest that mood disorders may play a role in the co-occurrence of overweight/obesity and FM. The studies that have so far explored this question have assessed current depressive symptoms [27] and a probable current diagnosis of major depression based on self-rating scales [10] and have led to highly conflicting results. No study has yet investigated the association between the presence of lifetime MD diagnosed using a structured psychiatric interview and BMI values in patients with FM.

The aim of this study was to evaluate whether one or more (including current) lifetime MD episodes and/or the level of lifetime hypomanic symptoms may be related to weight gain in FM patients. We hypothesised that comorbidity with lifetime major depression and the characteristics of a hypomanic mood are associated with a higher BMI.

2. Methods

2.1. Subjects

The study involved 115 consecutive outpatients who attended the Rheumatology Department of L. Sacco University Hospital in Milan, Italy, between May 2010 and May 2011. The same sample was used in a previous study that had a different aim [28].

The inclusion criteria were an age of 18–70 years and a diagnosis of fibromyalgia based on the American College of Rheumatology criteria [29], including widespread pain above and below the waist and on both sides of the body for at least three months, and pain in ≥ 11 of 18 tender points detected by a pressure of 4 kg/cm^2 applied for a few seconds. The exclusion criteria were inflammatory causes of pain, severe and uncontrolled medical illnesses, lifetime neurological disorders, alcohol/drug abuse or dependence, any clinical condition that might affect the reliability of the assessment, and pregnancy.

The study was approved by the Ethics Committee of L. Sacco University Hospital, and all of the participants gave their written informed consent after receiving a complete description of the protocol procedures.

2.2. Procedures

During a rheumatological examination, the subjects were asked whether they were willing to undergo a psychiatric assessment in the framework of a research study. Clinical and socio-demographic data were collected using interviewer-administered questionnaires, and recorded using a structured interview format; when possible, the data were validated by means of medical records. Anthropometric measurements were made using standard methods, and the subjects' BMI was calculated as weight (kg) divided by height (m) squared. According to the World Health Organization (WHO) classification based on the BMI, patients with FM were considered to be underweight if