

Enhanced serum cholesterol and triglyceride levels in bulimia nervosa: Relationships to psychiatric comorbidity, psychopathology and hormonal variables

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Abstract

Increased levels of cholesterol have been reported in patients with bulimia nervosa (BN), but all but one of the published studies were performed on non-fasting subjects, which limits the interpretation of this finding. Moreover, the relationships between serum lipids and comorbid psychiatric disorders or bulimic psychopathology have scarcely been investigated. We measured serum levels of total cholesterol, triglycerides, glucose, 17 β -estradiol and thyroid hormones in 75 bulimic women and 64 age-matched healthy females after an overnight fast. Compared with healthy women, bulimic patients exhibited significantly enhanced serum levels of cholesterol and triglycerides, but similar values of glucose, 17 β -estradiol, FT3 and FT4. No significant differences emerged in these variables between patients with or without comorbid depression, borderline personality disorder or lifetime anorexia nervosa. Circulating cholesterol was positively correlated to the patients' drive for thinness, ineffectiveness, interoceptive awareness and impulse regulation sub-item scores of the Eating Disorder Inventory-2. These findings confirm that BN is associated with increased levels of serum lipids. This alteration may be involved in the pathophysiology of certain psychopathological characteristics of BN and cannot be explained by the co-occurrence of other psychiatric disorders.

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1. Introduction

A wide range of peripheral biochemical abnormalities has been reported in patients with anorexia nervosa (AN) or bulimia nervosa (BN) (Brambilla and Mon-

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teone, 2003). Although these alterations have been generally regarded as secondary to the chronic malnutrition that follows the abnormal eating behaviours of these patients, they may contribute to the maintenance of the disorders themselves and/or to the genesis of organic and psychopathological complications.

Among the biochemical alterations detected in people with eating disorders (EDs), metabolic abnormalities, such as changes in glucose, lipid and protein homeostasis, are relatively common. In particular, lipid alterations are present in at least 50% of anorexics and are mainly represented by increased total serum cholesterol concentrations that do not correlate with thyroid dysfunction, severity of weight loss, dietary intake of nutrients, and presence of purging behaviours (Klinefelter, 1965; Nestel, 1974; Mordasini et al., 1979; Mira et al., 1985, 1987; Sanchez-Muniz et al., 1991). In BN, hypercholesterolemia has also been reported, but not adequately investigated. Indeed, some studies include relatively small samples of subjects (Vize and Coker, 1994; Case et al., 1999), some do not have a normal control group (Vize and Coker, 1994; Sullivan et al., 1998), and others may cover overlapping subject sets (Mira et al., 1985, 1987). Furthermore, five of the seven available studies measured cholesterol levels in non-fasting patients (Mira et al., 1985, 1987; Vize and Coker, 1994; Sullivan et al., 1998; Pauporte and Walsh, 2001), one reported longitudinal variations in serum cholesterol and triglycerides in a sample of fasted patients who were initially tested in a non-fasting state (Gendall et al., 2002), and only one assessed fasting cholesterol concentrations in a very limited number of bulimics (only 10 patients) (Case et al., 1999). Therefore, it is possible that the hypercholesterolemia reported in BN is related to the non-fasting status of the studied subjects. The elucidation of this issue is of great relevance. In fact, because of the chronic nature of BN, a persistent hypercholesterolemia may have potentially negative consequences on the subjects' health, since it increases the risk of coronary heart disease or stroke (Archbold and Timmis, 1998).

Moreover, in patients with psychiatric disorders other than EDs, changes in total serum cholesterol concentrations have been associated with certain psychopathological dimensions such as impulsivity, aggression, hostility, depression and suicidal tenden-

cies (Apter et al., 1999; Almeida-Montes et al., 2000; Sarchiapone et al., 2001; Agargun, 2002), which also frequently occur in people with BN. The relationships between serum cholesterol and psychopathology have been scarcely or not at all investigated in BN patients. Therefore, the possibility exists that changes in lipid concentrations are peculiar to those bulimics with comorbid Axis I/II psychiatric disorders and/or are related to specific psychopathological dimensions.

In the present study, we measured morning levels of total serum cholesterol and triglycerides in a large sample of drug-free bulimic women and healthy women after 12-h fasting, and assessed the relationships between serum lipids and comorbid psychiatric disorders, psychopathology or hormonal variables.

2. Methods

2.1. Subjects

A total of 139 women were recruited for the study. They were 75 outpatients attending the Eating Disorders Center of the Departments of Psychiatry of the Universities of Naples and Padua, and 64 healthy controls. According to DSM-IV criteria, patients fulfilled the diagnosis of BN, purging subtype, with binge episodes always followed by self-induced vomiting as confirmed by the Structured Clinical Interview for DSM-IV (SCID-I) (First et al., 1995). Both current and lifetime comorbid Axis I and Axis II psychiatric disorders were investigated with the SCID-I and SCID-II (First et al., 1997). Five bulimics also abused of laxatives, one abused of diuretics, and two exercised excessively. Moreover, five patients were amenorrheic; the remaining patients had normal regular menses. At the time of the study, all patients had been drug-free for more than 6 weeks. They were psychopathologically assessed by means of the following rating scales: (a) the Eating Disorder Inventory-2 (EDI-2) (Garner, 1991) and the Bulimia Investigation Test Edinburgh (BITE) (Henderson and Freeman, 1987) to evaluate eating-related psychopathology; (b) the Buss-Durkee Hostility Inventory (BDHI) (Buss and Durkee, 1957) to assess hostility and aggression; and (c) the Montgomery-Åsberg Depression Rating Scale (MADRS) (Montgomery and Åsberg, 1979) to measure concomitant depressive symptoms.

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