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Serum lipids and lifetime suicide attempts in patients with Obsessive-Compulsive Disorder

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ABSTRACT

The rate of suicide attempts in patients with Obsessive-Compulsive Disorder (OCD) is reported to be approximately 10%. Potential markers of suicidality, among which biological ones, have been identified. The aim of this naturalistic study is to evaluate the relationship between serum lipids levels and suicide attempts in patients with OCD. Subjects with a principal diagnosis of DSM-IV TR OCD and a YBOCS ≥ 16 were included. Sociodemographic and clinical characteristics, serum lipids profile, body mass index were collected. One-hundred-four patients were included. Nine patients (8.7%) reported at least a lifetime suicide attempt. HDL cholesterol was significantly lower while triglycerides were higher in lifetime suicide attempters compared to the other group. No significant differences emerged between attempters and non-attempters in serum total cholesterol, other metabolic parameters or Metabolic Syndrome (MetS) rate. Our study provides further evidence of a potential role of metabolic parameters on suicidality: decreased HDL-C and increased triglycerides levels could be a trait marker of higher vulnerability to suicidality in patients with OCD. Further studies should be performed with a longitudinal design in order to explain this association.

1. Introduction

Suicide can generate a wave of psychiatric events in affected families, cause a great burden for society and hurt others (Wu et al., 2016). The spectrum of suicidal behaviors ranges from suicidal ideation to attempts, and finally to suicide completion.

Suicide risk can be assessed through direct interviewing the patient but also through clinical observation of the patient's behavior, including non-verbal communication and body language, although the evaluation of the risk for future suicide attempts is often arduous for psychiatrists (Posner et al., 2011).

Comorbid Axis I disorders, increased severity of comorbid depressive and anxiety symptoms, increased severity of obsessions, feeling of hopelessness and past history of suicide attempts (including self-harm behaviors such as cutting) are among known risk factors for suicidality in OCD (Angelakis, Gooding, Tarrier, & Panagioti, 2015).

In recent years, some authors identified potential biological markers of suicidality among which serum lipid levels.

In the general population, Boscarino and colleagues (2009) found an association between low total cholesterol levels and external mortality, including deaths from suicide, in 4.462 United States veterans Boscarino, Erlich, and Hoffman (2009) while Kim and coworkers demonstrated a longitudinal association between serum cholesterol levels and suicidal ideation in an older population: both higher and lower total and LDL cholesterol levels at baseline and a decline in total cholesterol levels over the follow-up period predicted an increased incidence of suicidal ideation at follow-up (Kim et al., 2014).

In psychiatric populations, lower total cholesterol levels have been found to be significantly associated with suicidal ideation (De Berardis et al., 2012), suicide attempts (Emet, Yuce, Ozcan, Akgol Gur, & Saritemur, 2015; Oliè, Picot, Guillaume, Abbar, & Courtet, 2011), and suicide completion (Jee et al., 2011).

Interestingly, these results are trans-nosographic; the association was found in patients with schizophrenia (Marcinko & Popović-Knapić, 2008), schizoaffective disorder (Marcinko, Marcinko et al., 2008), major depressive disorder (Baek et al., 2014; Park, Lee, & Lee, 2014), bipolar disorder (Vuksan-Cusa, Marcinko, Nad, & Jakovljević, 2009), personality disorder (Agargun et al., 2004), panic disorder (De Berardis et al., 2013), and anorexia nervosa (Favaro, Caregaro, Di Pascoli, Brambilla, & Santonastaso, 2004). On the other hand, many studies were unable to identify a significant association between suicidality and serum lipid levels (D'Ambrosio, Salvi, Bogetto, & Maina, 2012; Park, Yi, Na, Lim, & Hong, 2013; Shakeri et al., 2015); other studies found a significant association between suicidality (deliberate self-harm, suicide ideation or attempts) and triglycerides (high or low), but not between suicidality and cholesterol levels, in psychiatric populations

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(Roaldset, Linaker, & Bjorkly, 2014) or in major depressive disorder (Cantarelli et al., 2015; Park et al., 2014).

The rate of suicide attempts in patients with OCD is approximately 10% (Angelakis et al., 2015; De Berardis et al., 2014; De Berardis, Serroni, Campanella, & Rapini, 2015). Some data suggested that the serum lipid profile might be altered also in OCD as compared to healthy subjects (Agargun et al., 2004). Furthermore, lower HDL-C levels, but not total cholesterol and triglycerides levels, were associated with higher suicidal ideation in 79 drug-naïve patients with OCD (De Berardis et al., 2014).

In order to further clarify the relationship between suicidal behavior and serum lipids levels in patients with OCD, we investigated whether patients with OCD with or without lifetime suicide attempts differed in terms of total cholesterol, triglycerides, HDL-C levels and rates of Metabolic Syndrome (MetS). We anticipated finding lower serum lipids levels, in particular total cholesterol levels, in OCD patients with at least one lifetime suicide attempt.

2. Material and methods

Subjects for this study were recruited from all patients with a principal diagnosis of OCD consecutively referred to the Mood and Anxiety Disorders Unit, Department of Neuroscience, University of Turin (Italy) over a period of 3 years (January 2011-December 2013). This is a tertiary referral center located within the University Hospital and specialized in the treatment of patients with OCD.

Inclusion criteria were that patients had a principal diagnosis of OCD according to DSM-IV TR, had a minimum total score of 16 on the Yale-Brown Obsessive Compulsive Scale (Y-BOCS), were at least 18 years of age, and were willing to voluntarily participate in the study.

Exclusion criteria included primary diagnosis of schizophrenia, schizoaffective disorder, delusional disorder, alcohol and/or substance dependence; pregnancy or having just given birth and refusal to give consent prior to participate in the study.

All subjects were of Caucasian Italian origin. Of the potential participants (N = 119), 15 subjects refused to participate (12.6%). The sample included 104 subjects. All patients were taking antiobsessive medications (selective serotonin reuptake inhibitors or clomipramine) as recommended by guidelines at study entry.

Informed consent was obtained from patients after the procedure had been fully explained.

2.1. Assessments and procedures

Data were obtained through the administration of a semistructured interview that we used in our previous studies with a format that covered the following areas: socio-demographic data, diagnostic evaluation and comorbidities (by means of the Structured Clinical Interview for DSM-IV Axis I and II Disorders), illness characteristics such as age at onset and course of OCD. In addition, the following rating scales were included in the assessment: Y-BOCS, Hamilton Anxiety Rating Scale (HAM-A) and 17-item Hamilton Depression Rating Scale (HAM-D), Clinical Global Illness – Severity (CGI-S).

The inter-rater reliability of DSM-IV diagnoses using the SCID-I was tested before the beginning of the study (>.80 for the presence of any lifetime Axis I disorders). Inter-rater reliabilities of the Y-BOCS, HAM-A and HAM-D total scores were also good (>.80).

History of lifetime suicidal behavior was retrospectively and systematically assessed for each patient. As recommended by the US National Institute of Mental Health a suicide attempt was defined as a self-destructive behavior with the intention of ending one's life, independently of the resulting damage (O'Carroll et al., 1996). The exact time of occurrence of a lifetime suicide attempt was recorded for each patient, as well as the method of the suicide attempt (violent, e.g. firearm, hanging, jumping, car exhaust, drowning, or non violent, e.g. drug overdose, superficial phlebotomy).

Body weight, height, waist circumference and blood pressure were also measured. Weight was measured undressed and fasting; height was measured barefoot. Body Mass Index (BMI), defined as the ratio of bodyweight (in kilograms) and height (in meters squared), was calculated. Based on the score of the BMI, patients were divided into classes in accordance with the World Health Organization, as follows: obese (BMI $>30\ kg/m^2$), overweight (BMI between 25.0 and 29.9 kg/m^2) and normal weight (BMI between 18.5 and 24.9 kg/m^2). Waist circumference, measuring central adiposity, was taken midway between the inferior margin of the ribs and the superior border of the iliac crest, at minimal respiration. Two blood pressure measurements were obtained by using a mercury sphygmomanometer: the first with the subject in a lying position and the second with the subject in a seated position at least 2 min after the first measurement. The mean blood pressure of the two measurements was used. The attending physician in hospital setting performed all procedures.

A blood draw for routine blood exam was performed at hospital admission for all patients as a part of the clinical management routine. Blood samples were taken between 7:00 and 8:30 a.m. after the patients had fasted for at least 10 h and after a psychiatric evaluation; patients who were not fasting were rescheduled. Blood exams included glucose, total cholesterol, triglycerides, low-density lipoprotein and HDL-C. Blood samples were drawn in our clinic and examined in the "Baldi e Riberi" laboratory of analysis, San Giovanni Battista Hospital, Turin, Italy.

Metabolic syndrome (MetS) was diagnosed according to the National Heart, Lung, and Blood Institute (NHLBI, 2002) (National Cholesterol Education Program-NCEP) and to American Heart Association (AHA), and defined as at least 3 of 5 of following criteria:

- Abdominal obesity: waist circumference ≥102 cm in men and ≥88 cm in women.
- Hypertriglyceridemia: ≥150 mg/dL or on lipid-lowering medication.
- Low HDL-c: <40 mg/dL in men and <50 mg/dL in women.
- High blood pressure: systolic pressure ≥130 mmHg and/or diastolic pressure ≥85 mmHg or on antihypertensive medication.
- High fasting glucose: ≥100 mg/dL or on glucose-lowering medication.

2.2. Statistical analysis

The socio-demographic and clinical characteristics of the subjects were represented as mean and standard deviation (SD) for continuous variables and in terms of frequency and percentage regarding categorical variables. A statistical comparison between OCD patients with and without lifetime suicide attempts was performed to examine whether there was any difference in terms of total cholesterol, triglycerides, HDL-C levels and metabolic syndrome.

The Student's t-test and the Pearson's Chi-square test were used for bivariate analyses: continuous variables were compared using the unpaired Student's t-test for two-class comparisons, categorical variables using the Pearson's chi-square test. All data were analyzed using SPSS version 18.0 (SPSS Inc., Chicago, IL, USA) and the value of statistical significance was set at $p < .05$.

3. Results

One hundred four patients with OCD were recruited for the present study. Of them, nine patients (8.7%) had attempted suicide in their life; all nine patients had attempted suicide in the previous 12 months (seven in the previous 3 months). Of the suicide attempters, 3 patients committed a violent suicide behavior (hanging and firearm), the others attempted suicide with a non-violent method (drug overdose). None of the nine patients showed a positive family history of suicidal behavior or major depressive disorder.