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Cholesterol and Triglycerides in Antipsychotic-Naïve Patients with Nonaffective Psychosis

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Abstract

Patients with psychosis have an increased prevalence of hyperlipidemia. We compared fasting concentrations of lipids in newly diagnosed, antipsychotic-naïve patients with nonaffective psychosis (N=87) and control subjects (N=92). After accounting for gender, age, smoking, socioeconomic status, and body mass index, there was no significant difference between the two groups in total cholesterol, high-density lipoproteins, low-density lipoproteins, or triglycerides.

Keywords

lipids; cholesterol; triglycerides; schizophrenia; metabolism

1. Introduction

Cardiovascular events have an increased prevalence among patients diagnosed with schizophrenia and accounts for much of the increased mortality rate in this group (Saha et al., 2007). Antipsychotic medications have been associated with an increased risk of weight gain and diabetes (Suvisaari et al., 2008), although there appear to be important differences among this group of drugs (Newcomer, 2007; Tschoner et al., 2007). With chronic

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treatment, increased cholesterol and triglyceride blood concentrations are also found (Meyer and Koro, 2004; Olfson et al., 2006).

However, there is also some evidence that people with nonaffective psychosis have metabolic abnormalities, including an increased risk of diabetes or impaired glucose tolerance, an increased pulse pressure, and an increase in the pro-inflammatory molecule interleukin-6, prior to antipsychotic treatment (Fernandez-Egea et al., 2009a; Fernandez-Egea et al., 2009b; Ryan et al., 2003). In other populations, these metabolic abnormalities are associated with increases in both cholesterol and triglycerides (Braun, 2001; Howard, 1999). We tested the hypothesis that newly diagnosed patients with nonaffective psychosis also have increased lipids prior to antipsychotic treatment

2. Materials and Methods

Newly diagnosed patients with nonaffective psychosis were enrolled in a metabolic study if 1) they had a cumulative (lifetime) antipsychotic exposure of 7 days and no use in the previous 30 days, and 2) they met the DSM criteria for schizophrenia, schizophreniform disorder, brief psychotic disorder, or psychosis not otherwise specified, but not schizoaffective disorder. These patients were part of a larger, ongoing study of metabolic abnormalities in newly diagnosed patients (see ref (Fernandez-Egea et al., 2009a), for more details).

Healthy control subjects were recruited via advertisements, and had no lifetime history of a psychotic disorder or depressive disorder, or a current adjustment disorder. Additional criteria for all of the subjects were (1) age from 18 to 60 years old; (2) no history of diabetes or any other serious medical condition associated with insulin resistance or/and glucose intolerance; (3) not taking any medication which is associated with glucose intolerance or insulin resistance including hydrochlorothalidone, beta blockers, glucocorticoids, phenytoin, nicotinic acid, cyclosporine, pentamidine, and narcotics; (4) no history of cocaine use in the previous 30 days; (5) no previous diagnosis of schizophrenia or major depressive disorder or a current diagnosis of adjustment disorder. All subjects gave informed consent.

The subjects were interviewed using the Spanish translation of the Structured Clinical Interview for DSM-IV Axis I Disorder, Clinician Version (SCID-I). They were also administered the Dartmouth Assessment of Lifestyle Inventory (Rosenberg et al., 1998), which quantifies substance abuse. Socioeconomic status (SES) was assessed subjects using the Hollingshead-Redlich scale (1958). A blood sample for assaying triglycerides, cholesterol, low-density lipoproteins (LDL) and high-density lipoproteins (HDL) was obtained between 8 AM and 9 AM after an overnight fast. Body mass index (BMI) was calculated using the formula of weight (kg)/height (m)².

Two sets of analyses were performed. For the first, blind to lipids value, subjects from each group were selected so that the two resulting groups were matched for gender, age, BMI and smoking habit. The matching entailed restricting the sample to those under the age of 40, including psychosis subjects who were completely antipsychotic-naïve, and removing psychosis subjects with very low BMI values. In the second set of analyses, all recruited subjects were included, and multiple regression analysis in SPSS for Windows was to

compare the two groups. In this second analysis, the independent variables were diagnostic group (patient vs. control), gender, age, smoking (as measured by the average number of cigarettes per day, which in our sample was significantly correlated with all drug abuse as measured by DALI total score), SES, and BMI. In both sets of four analyses, the dependent variables were triglycerides, total cholesterol, HDL, and LDL.

3. Results

In the matched samples, there were 76 psychosis subjects and 76 control subjects. In the second, multiple regression analysis, there were 87 subjects with psychosis and 92 control subjects.

Table 1 presents clinical and demographic characteristics of the two matched groups. There was not a significant difference between the psychosis and control subjects in any of the four lipid measures. A confirmatory multiple regression analysis in the matched samples, using the independent variables listed above, also failed to show any difference between the two subject groups (Table 2).

In the multiple regression analysis in which all recruited subjects were included, no differences were found between the psychosis and control groups in any of the four lipid measures (Table 3).

4. Discussion

We did not find a significant difference in blood levels of triglycerides, total cholesterol, HDL, or LDL in a comparison of newly diagnosed, antipsychotic-naïve patients with nonaffective psychosis and control subjects. Although significant differences might be found with larger samples, given our sample sizes, any such differences are likely to be small.

These negative results contrast with our previous findings of differences in glucose tolerance, inflammation, and pulse pressure, which are usually associated with lipid abnormalities. Our failure to find a difference may be due to the relatively young age of our subjects, who had an average age less than thirty, or to their relatively low average BMI. Although many studies found that patients with psychosis and both chronic illness and chronic antipsychotic treatment usually have elevated BMI values, the evidence suggests patients with psychosis are thin compared to the general population both in childhood and at the time of first clinical contact (Wahlbeck et al., 2001). Verma et al. (2009) found significantly higher total cholesterol and LDL than control subjects, but in that study, the control subjects had significantly higher average BMI, and the potentially confounding effects of smoking and socioeconomic status were not considered. A larger study might find a significant difference between antipsychotic-naïve patients and matched control subjects, but any such difference is likely to be small. An older antipsychotic-naïve patient group might also have increased lipids.

Our results suggest that hyperlipidemia in patients with psychosis are likely due to the metabolic side effects of antipsychotics, especially weight gain, and to the poor health habits

that are common in this group. Our findings underline the importance of monitoring weight in patients with psychosis, and encouraging weight loss when patients become overweight.

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Table 1

Clinical & Demographic Characteristics of the Psychosis and Control Groups.

	Psychosis (N=76)	Control (N=76)	p value
Age	27.1 (5.3)	27.0 (4.5)	0.959
% male (n)	64% (49)	64% (49)	1.000
BMI	22.3 (3.8)	23.1 (2.8)	0.154
Daily cigarettes	7.4 (8.2)	5.7 (8.0)	0.202
Parental SES	37.9 (14.9)	44.8 (14.5)	0.013
Total cholesterol	168.1 (34.8)	175.4 (32.2)	0.183
HDL	51.5 (17.3)	52.0 (12.6)	0.838
LDL	99.6 (31.4)	105.8 (28.8)	0.214
Triglycerides	84.9 (38.6)	87.5 (52.2)	0.727

Table 2

Multiple Regression Results: Total Cholesterol, HDL, LDL, & Triglycerides for the Matched Sample.

Variable	p value	p value	p value	p value
Age	<.01	0.30	<.01	0.23
Gender	0.78	<.01	0.66	<0.01
BMI	0.64	0.18	0.26	0.57
Daily cigarettes	0.57	0.97	0.81	0.70
SES	0.13	0.10	0.35	0.91
Diagnosis:				
Total cholesterol	0.24			
HDL		0.74		
LDL			0.32	
Triglycerides				0.60

Table 3

Multiple Regression Results: Total Cholesterol, HDL, LDL, & Triglycerides for the whole sample.

Variable	p value	p value	p value	p value
Age	<.01	0.18	<.01	0.13
Gender	0.35	<.01	0.95	<0.01
BMI	0.22	0.30	0.14	0.92
Daily cigarettes	0.19	0.36	0.10	0.25
SES	0.11	0.12	0.39	0.91
Diagnosis:				
Total cholesterol	0.16			
HDL		0.64		
LDL			0.22	
Triglycerides				0.71