Major depression and bipolar disorder contribute significantly towards an increased atherogenic index of plasma

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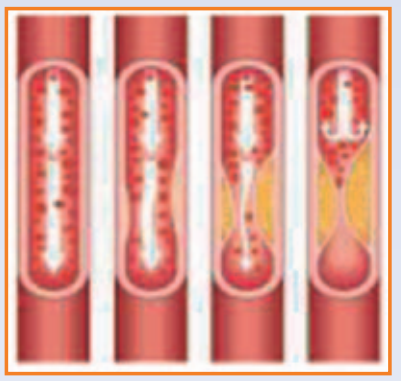
Purpose of the study

Bipolar disorder (BD) and major depression (MD) are associated with an increased risk for cardiovascular disease, diabetes mellitus and obesity [1]. Morbidity and mortality of cardiovascular disease (CVD) is exceedingly high worldwide [2]. Systems that contribute to this co-morbidity include the central and autonomic nervous systems, the neuroendocrine, immune, vascular and hematologic systems. Inflammation occurs in cardiac and cardiovascular pathology independent of the presence or absence of depression and in depression. Inflammation is closely associated with endothelial dysfunction which is a preamble to atherosclerosis and atherothrombosis [1].



Methods

This cross-sectional study examined participants with major depression (n= 91), bipolar disorder (n= 45) and normal controls (n= 199) recruited from the staff at Londrina State University (UEL). All participants were men and women aged 18-60 and all ethnicities were accepted. The study was conducted from March 2011 to July 2012. All subjects gave informed consent to participate. Body Mass Index (BMI) was calculated as weight (Kg) divided by square of height (m2). Peripheral blood samples were collected from all participants after 12 to 14h overnight fasting. Atherogenic Index of Plasma (AIP) was calculated as log TG/HDL-c. Analysis of covariance (ANCOVA) was used to compare the groups divided according to diagnoses while adjusting for relevant covariates. All analyses were performed using SPSS (version 20).

Results

There were no significant differences between the three study groups in terms of age, race, marital status or years of education. Analysis of contingency tables showed that there was a significant association between mood disorders and female gender. There were significant differences between subjects with depression and bipolar disorder and controls in smoking. There was no significant difference in the incidence of the metabolic syndrome between depression and bipolar disorder and normal volunteers athough there was a trend towards a higher prevalence in bipolar disorder. Table 1 shows the prevalence of an increased AIP in the three diagnostic groups. 41.8% of bipolar patients and 36.2% of depressed patients showed a high AIP versus 23.6% of normal controls (p = 0.021).

Table 1. Prevalence of an increased AIP (> 0.21) in the three diagnostic groups

groups	low AIP (<0.21)	high AIP (>0.21)	% high AIP
Normal controls	152	47	23.6
Major Depression	58	33	36.2
Bipolar Disorder	27	18	41.8

F2 =7.73, df=2, p=0.021

Conclusions

The major finding of this study is that the AIP is significantly higher in bipolar and depressed patients than in normal controls. As such, bipolar disorder and unipolar depression may increase atherogenic risk. The increased risk of CVD has many causes, but dyslipidemia plays a prominent role in it. A limitation of the study is that it does not include information regarding the effects of the long-term use of psychotropic mediactions on the BMI or metabolic syndrome. Nevertheless, our results were adjusted for BMI and metabolic syndrome. Despite this limitation, this study shows atherogenesis is another factor underpinning the comorbidity between affective disorders and CVD and that BD and MD are characterized by an increased AIP independent of age, sex, physical activity, nicotine dependence, BMI and the metabolic syndrome.

References

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No potential conflict of interest

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