BIOCHEMICAL PARAMETERS ASSOCIATED WITH INFLAMMATION IN DEPRESSION AND THEIR RELATIONSHIP WITH SUICIDALITY

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Introduction

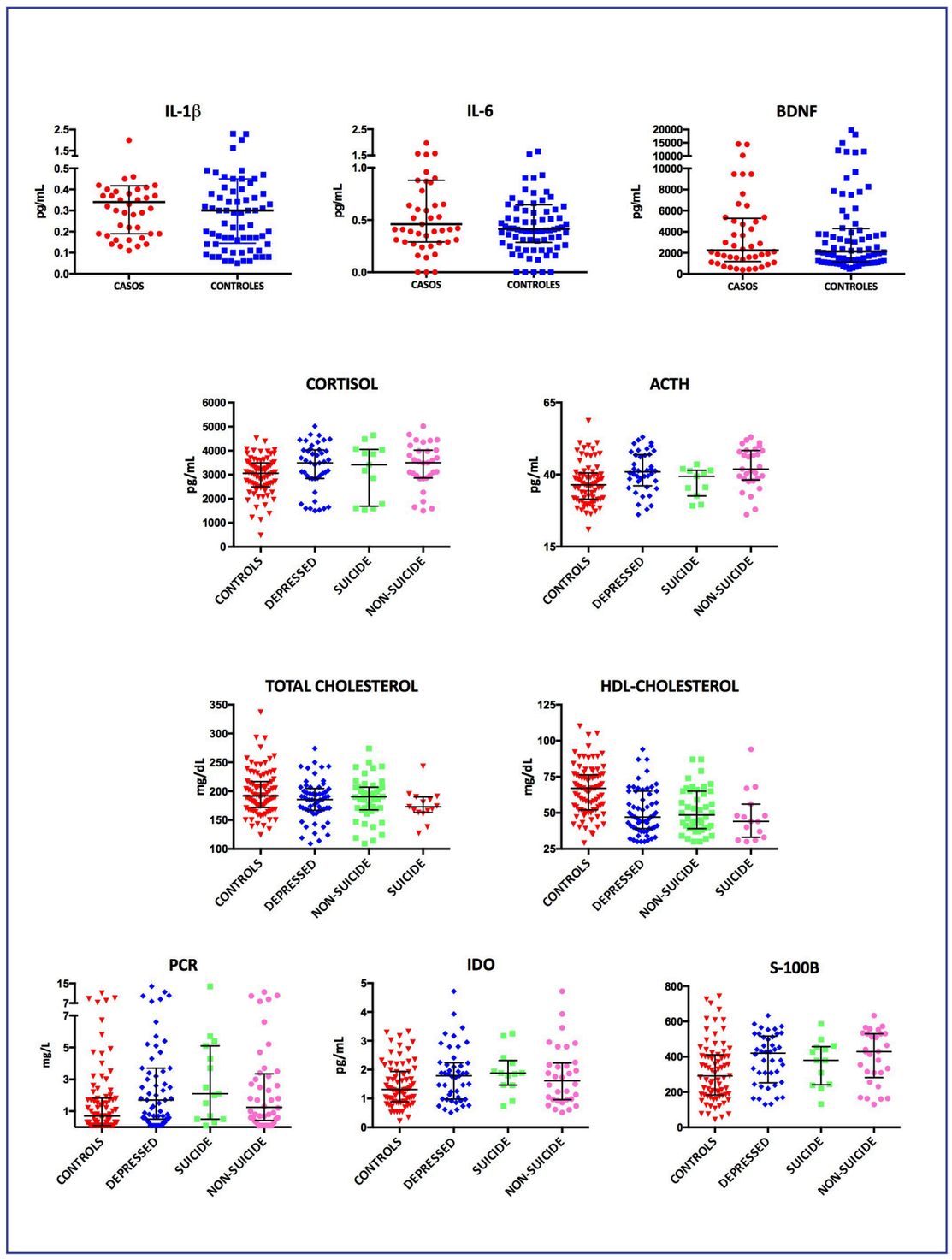
In the last decades is largely studied the involvement of inflammation and neuroinflammation in the pathogenesis of depressive disorders. The activation of the hypothalamic-pituitary-adrenal axis [1] and increased pro-inflammatory cytokines such as IL-6 and IL-1β in blood and central nervous system (CNS) of depressed patients have been described [2]. These cytokines could activate the enzyme indoleamine 2,3-dioxygenase (IDO), contributing to kynurenine pathway activation [3]. Enhanced tryptophan degradation via the kynurenine pathway could induce neurotoxic changes both in glia and neurons. In this context, the S100 calcium binding protein B (S100B) is considered a peripheral marker of the glia damage [4] and the BDNF a marker of neuroplasticity [5].

Objectives

The aim of this study was to analyse the potential alterations of different components of the inflammatory response, glial damage markers, HPA axis activity markers and metabolic parameters in blood plasma in 59 depressed patients and 89 healthy volunteers. We also wanted to analyse whether there were differences between patients with and without suicidal behaviours for the differential parameters.

Methods

Patients were recruited at the psychiatric hospitalization unit and diagnostic was made under DSM-IV-TR criteria. Controls were recruited from hospital workers and patients non-consanguineous relatives. Patients were classified as suicidal (n:15) or non-suicidal (n:44) according to the presence or absence of a history of suicide attempts. Molecular analyses for the proinflammatory cytokines IL-6 and IL-1β, the HPA axis activity markers cortisol and ACTH, the glial lesion marker S-100B, the IDO enzyme level, and the inflammatory marker CRP (C-reactive protein) were performed by ELISA and particle-enhanced immune-turbidimetric assay commercial kits. Analyses of HDL-cholesterol were performed by a photometric enzymatic test. As data were not normally distributed, statistical comparisons between controls and depressed patients and between suicidal and non-suicidal patients were performed by Mann-Whitney test.



Results

In the study of the inflammatory and neuroinflammatory markers we did not found differences between cases and controls for IL-1β (p: 0,2887), IL-6 (p: 0,2360), and BDNF (p: 0,9234).
We did found higher levels of cortisol (p=0,0149), ACTH (p=0,0004), S-100B (p=0,0010), IDO (p=0,0446), and CRP (p=0,0150) in depressed patients. We found also elevated levels of HDL-cholesterol (p<0,0001) in the depressed group. Among these differential parameters no statistical differences were found between the suicidal and non-suicidal groups: cortisol (p=0,7849), ACTH (p=0,0503), S-100B (p=0,4547), IDO (p=0,4241), CRP (p=0,3345), and HDL-cholesterol (p=0,3713).

Conclusions

No differences were found in proinflammatory cytokine concentrations between depressed patients and controls. Higher levels of CRP in the patients group show the presence of a systemic inflammatory state in depression and higher levels of IDO in this group confirm the activation of the kinurenine pathway. Elevation of S-100B, also present, suggests glial lesion in patients. No differences were found in these parameters between suicidal and non-suicidal patients. Elevated cortisol and ACTH confirm the presence of HPA axis dysregulation in depression. Although without statistical signification, the elevation of ACTH appears higher in the suicidal group. Depressed patients show decreased levels of HDL-cholesterol, with no differences between suicidal and non-suicidal.

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KEYWORDS
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Neuro-inflammatory disorder