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ORIGINAL PAPER

Oxidative stress in drug-naïve first episode patients with schizophrenia and major depression: effects of disease acuity and potential confounders

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Abstract Oxidative stress and immune dysregulation have been linked to schizophrenia and depression. However, it is unknown whether these factors are related to the pathophysiology or whether they are an epiphenomenon. Inconsistent oxidative stress-related findings in previous studies may have resulted from the use of different biomarkers which show disparate aspects of oxidative stress. Additionally, disease severity, medication, smoking, endocrine stress axis activation and obesity are potential confounders. In order to address some of these shortcomings, we have analyzed a broader set of oxidative stress biomarkers in our exploratory study, including urinary 8-iso-prostaglandin F2α (8-iso-PGF2α), 8-OH-2-deoyxguanosine (8-OH-2-dG), and blood levels of malondialdehyde (MDA), superoxide dismutase (SOD) and glutathione *S*-transferase (GST) in acutely ill drug-naïve first episode patients with schizophrenia ($n = 22$), major depression ($n = 18$), and controls ($n = 43$). Possible confounding factors were considered, and patients were followed-up after 6 weeks of treatment. No differences were observed regarding 8-OH-2-dG, MDA and GST. At baseline, 8-iso-PGF2α levels were higher in patients with schizophrenia ($p = 0.004$) and major depression ($p = 0.037$), with a trend toward higher SOD concentrations in schizophrenia ($p = 0.053$). After treatment, schizophrenia patients showed a further increase in 8-iso-PGF2α ($p = 0.016$). These results were not related to age, sex, disease severity, medication or adipose tissue mass. However, 8-iso-PGF2α was associated with smoking, endocrine stress axis activation, C-reactive protein levels and low plasma concentrations of brain-derived neurotrophic factor. This study suggests a role of lipid peroxidation particularly in drug-naïve acutely ill schizophrenia patients and highlights the importance of taking into account other confounding factors in biomarker studies.

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