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Research report

Kynurenine pathway in major depression: Evidence of impaired neuroprotection

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Abstract

The neurodegeneration hypothesis proposed major depression as a consequence of the imbalance between neuroprotective and neurodegenerative metabolites in the kynurenine pathway. To test the hypothesis, plasma tryptophan and kynurenine pathway metabolites were studied in 58 patients with major depression and 189 normal controls. The mean tryptophan breakdown index was higher ($p=0.036$), and mean kynurenic acid concentration and mean neuroprotective ratios were lower, in depressed patients ($p=0.003$ and 0.003, respectively). In receiver operating characteristic analysis, the kynurenic acid concentrations and the neuroprotective ratio showed clear discrimination between depressed patients and controls with area under the curve 79% and 76.3% respectively. The neuroprotective ratio did not change after treatment in those with repeated episodes of depression but it increased significantly ($p=0.044$) in those with first episodes. The results suggested that the reduction in neuroprotective markers, which indicated an impaired neuroprotection, might play an important role in pathophysiology of major depression.

Keywords: Major depression; Kynurenic acid; Neuroprotective ratio; Neuroprotection