
VOLUME OF CAUDATE NUCLEUS IN MAJOR DEPRESSIVE DISORDER

S. Pradhan¹, F. MacMaster², N. Jaworska³, R. Ramasubbu³

¹Medicine, Royal College of Surgeons in Ireland, Dublin, Ireland ; ²Psychiatry and Pediatrics, University of Calgary, Calgary, Canada ;

³Psychiatry, University of Calgary, Calgary, Canada

Major depressive disorder (MDD) is a disabling illness characterized by sadness, guilt and melancholia, and is the third most common cause of disability worldwide according to the World Health Organization. Studies have shown the caudate nucleus to be implicated in emotion and reward, as emotional networks are localized to the head of caudate. Smaller caudate nuclei volumes have been noted in depressed patients.

This study aimed to investigate whether volumetric abnormalities in the caudate nuclei were significant in the pathogenesis of MDD. We hypothesized that a smaller caudate nucleus would be present in adult MDD patients.

19 healthy controls (8 males and 11 females, ages 20-52) and 51 MDD patients (18 males and 33 females, ages 19-58) underwent magnetic resonance imaging and volume of the caudate nuclei was determined by performing manual tracing using Analyze Direct 10.0 by a trained and reliable rater.

No significant differences were found between healthy controls and MDD patients in the right, left and total caudate volumes. However, there was a negative correlation between age, and right, left and total caudate volumes in both MDD patients and controls. Right caudate volume correlated with change in depression scale scores with treatment in MDD patients. Also, a trend for larger right caudate volumes in the treatment responder group was observed.

These findings differ with previous literature; possible reasons for this include medication history or differing methods of caudate nucleus measurement. This data suggests that right caudate nucleus volume may be predictive of treatment response.