## 3 - Clinical Anatomy

### OC-107 - (23950) - EVALUATION OF SUBSTANTIA NIGRA, SUBTHALAMIC AND RED NUCLEUS VOLUMES WITH BIPOLAR DISORDER: A MORPHOMETRIC STUDY

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Substantia nigra, subthalamic nucleus and red nucleus are brain structures involved in behavioral regulation. While dysfunctions in these regions are well-documented in movement disorders like Parkinson's disease, their role in neuropsychiatric conditions is less understood. Alterations in these structures have been observed in schizophrenia, which shares pathophysiological features with bipolar disorder. However, research on these regions in bipolar disorder is limited. This study aims to evaluate potential volumetric changes in these nuclei in individuals with bipolar disorder.
A retrospective study was conducted using MRI data from the Department of Radiology at Ankara Etlik City Hospital between January and July 2024. Thirty patients with bipolar disorder were compared to thirty healthy controls. Brain volume measurements of the substantia nigra, subthalamic nucleus, and red nucleus were analyzed using pBrain software, and statistical comparisons were performed using SPSS-22.
A significant volume reduction was found only in the right substantia nigra, with patients at 0.32±0.23 and controls at 0.57±0.19 ($p<0.05$), reflecting a 44% decrease. The volumes of the red nucleus and subthalamic nucleus were reduced by 62.5% and 66.7%, respectively, but these differences were not statistically significant ($p>0.05$). No significant differences were observed for sex or age.
Structural changes in the substantia nigra may provide insights into the neurobiology of bipolar disorder, suggesting overlaps with schizophrenia and movement disorders. The volume reduction indicates potential disruptions in dopaminergic pathways. The roles of the subthalamic nucleus and red nucleus in disease progression require further exploration, particularly regarding functional connectivity and clinical outcomes.

**Palavras-chave : bipolar disorder, volBrain, morphometric analysis**