World Academy of Science, Engineering and Technology
International Journal of Medical and Health Sciences
Vol:13, No:04, 2019

Subthalamic Nucleus in Adult Human Cadaveric Brain: A Morphometric Study

Authors : Mangala Kohli, P. A. Athira, Reeha Mahajan

Abstract : The subthalamic nucleus (STN) is a biconvex nucleus situated in the diencephalon. The knowledge of the morphometry of the subthalamic nucleus is essential for accurate targeting of the nucleus during Deep Brain Stimulation. The present study aims to note the morphometry of the subthalamic nucleus in both the cerebral hemispheres which will prove to be of great value to radiologists and neurosurgeons. A cross-sectional observational study was conducted in the Departments of Anatomy and Forensic Medicine, Lady Hardinge Medical College & Associated Hospitals, New Delhi on thirty adult cadaveric brain specimens of unclaimed and donated corpses. The specimens were categorized into 3 age groups: 20-35, 35-50 and above 50 years. All samples were collected after following the standard protocol for ethical clearance. The morphometric study of 60 subthalamic nucleus was thus conducted. Transverse section of the brain was made at a plane 4mm ventral to the plane containing mid commissural point. The dimensions of the subthalamic nucleus were measured bilaterally with the aid of digital Vernier caliper and magnifying glass. In the present study, the mean length and width and AC-PC length of the subthalamic nucleus was recorded on the right and left side in Group A, B and C. On comparison of mean of subthalamic nucleus dimensions between the right and left side in Group C, no statistically significant difference was observed. The length and width of subthalamic nucleus measured in the 3 age groups were compared with each other and the p value calculated. There was no statistically significant difference between the dimensions of Group A and B, Group B and C as well as Group A and C. The present study reveals that there is no significant reduction in the size of the nucleus was noted with increasing age. Thus, the values obtained in the present study can be used as a reference for various invasive and non-invasive procedures on subthalamic nucleus.

Keywords : cerebral hemisphere, deep brain stimulation, morphometry, subthalamic nucleus
Conference Title : ICHAP 2019 : International Conference on Human Anatomy and Physicology
Conference Location : Dublin, Ireland
Conference Dates : April 25-26, 2019