



Poster

doi: 10.5835/jecm.omu.31.02.037



Does the proportion of the brainstem change in the Parkinsonism?

Ilkay Camlidag^a, Mert Nahir^{b*}, Fikri Ozdemir^b, Amani Elfaki^b, Murat Golpınar^b, Bunyamin Sahin^b

^a Department of Radiology, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Turkey

^b Department of Anatomy, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Turkey

ARTICLE INFO

ABSTRACT

* Correspondence to:

Mert Nahir
Department of Anatomy,
Faculty of Medicine,
Ondokuz Mayıs University,
Samsun, Turkey
e-mail: mert.nahir@gmail.com

Keywords:

Brainstem
Magnetic resonance imaging
Parkinson's disease
Planimetry
Volume fraction

Parkinson's disease (PD) is a slowly progressive neurological disorder that affects movement, muscle control, and balance. It develops as cells are destroyed in certain parts of the brain stem. The aim of this study is to measure the volume and volume fraction of the brainstem parts to examine the differences between affected regions in the PD. For the evaluation of brainstem volume, the sample comprised 18 Parkinson's patients (8 females and 10 males) in the 2nd and 3rd stages the disease, and 20 controls (9 females, 11 males). Magnetic resonance images in DICOM format were analyzed using the Image software. A protocol was developed to segment the parts of the brainstem and their volumes and volume fractions were estimated using the planimetry technique. The mean volume and volume fraction of the midbrain, pons, medulla oblongata and the total brainstem in control were (8.2 cm³±1.14, 27.61%), (16.25 cm³±2.75, 54.37%), (5.32 cm³±0.73, 18.02%), and 29.78 cm³±4.11, respectively. And for patient groups were (7.91 cm³±1.5, 26.64%), (16.25 cm³±2.49, 55.38%), (5.32 cm³±0.89, 17.98%), and 29.78 cm³±4.0, respectively. There were no statistically significant differences between patients and controls for the volume and volume fraction of the brainstem parts (p≥0.05). Our data indicates that patients with PD do not show brainstem volume reduction in comparison with controls. Volumetric brain imaging studies in PD are conflicting with regards to brainstem atrophy. A number of factors may contribute to this variability, including differences in analysis methods, variability in the disorder itself and also due to variations in sampling selection. Our findings are still preliminary; we are trying to find changes associated with substantia nigra and red nucleus to evaluate the relation between the clinical scores of PD patients and imaging results.

J. Exp. Clin. Med., 2014; 31:145