

RADIOMORPHOMETRIC ANALYSIS OF HUMAN PITUITARY GLAND DURING THE AGING PROCESS

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During life, there are significant changes in the function of the hypothalamic-pituitary axis and its relationship to other endocrine glands in the body, which can affect the external and internal gland morphology. Also, the wide range of pathological changes shows the change in pituitary volume. The knowledge of dimensions and volume of the pituitary gland is very important for the correct diagnosis and prognosis of pituitary diseases.

The aim of our study was to perform radiomorphometric analysis of size and volume of human pituitary gland according to age and gender on MRI.

Our study represents a retrospective study which included 144 subjects (60 male (41.6 %) and 84 female (58.3 %)) with age range 20-80 years, who underwent magnetic resonance imaging (MRI) of the endocranium. Subjects were divided based on age: first (20-39), second (40-59) and the third group (60-80). Three pituitary diameters were measured: anteroposterior (AP), latero-lateral (LL) and craniocaudal (CC). Pituitary volume (V) was calculated based on the formula: $V = AP \times LL \times CC / 2$.

Our study showed a statistically significant difference for the parameters AP-H ($p < 0.037$) and AP-A ($p < 0.040$) in patients of the first and second age group. In addition, the parameter CC showed a statistically significant difference between the first and third age group ($p < 0.031$). The value of AP-H parameter in females was 10.99 ± 1.16 mm, while in males it was 10.43 ± 1.31 mm, indicating a statistically significant difference for AP-H parameter in both genders ($p < 0.008$). The AP-N parameter in female subjects was 2.21 ± 0.72 mm, and in male subjects 1.91 ± 0.67 mm, which also indicates that there was a statistically significant difference of AP-N parameter between genders ($p < 0.012$).

The pituitary gland parameter values that were obtained in our study show normal values of pituitary gland dimensions in the Serbian population. During the aging process, the morphology of the pituitary gland changes, AP parameter increases, and parameter CC decreases. In addition, differences between genders were recorded which should be kept in mind during the analyses of pathological conditions or injury of the pituitary gland.

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Key words: pituitary gland, MRI, radiomorphometric analysis, aging, volume