

Age determination using bone structures of skull base in forensic personal identification

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The report focuses on the importance of skull base study in personal identification, abilities of determining age by morphological and morphometric features of skull base bone structures, using the main reference points such as the sella turcica, clivus, frontal and sphenoid sinuses. 223 computer-aided tomography scanning images were selected for the analysis of skull base bone structures in lateral projection. Also a morphometric study of sella turcica was done on 103 cadavers prepared for autopsy with sectional sawing of the skull. No pathology was revealed of skull base bones of selected material. The age range was from 18 to 88 years. For measurements on Ct-scanning images EFILM Workstation 3.4 and Adobe Photoshop CS5 extended have been used, on cadavers-caliper with scale 0.1mm. Morphology and morphometry of sella turcica, clivus and sinuses are very individual, nevertheless were observed features of these structures that vary in regular manner with age. Differences in development of postnatal ontogenesis of the frontal and the sphenoid sinuses allow establish correlations in age using the ratio of measurements of the frontal sinus to sphenoid sinus to determine the age period. The combined quantitative and qualitative evaluation of the individual features of skull base bone structures: sella turcica, clivus, frontal and sphenoid sinuses can be used as points for identification, also their configuration slightly changes with age. The stability of some features and variability of the other throughout life enables to develop new diagnostic criteria for the purposes of personal identification, particularly human biological age.

Biography

MA Garcia Corro graduated from I M Sechenov First, Moscow State Medical University in 2013 and has completed Master's degree in Forensic Medicine. Currently, she works in Moscow Bureau of Forensic Medicine in Criminology laboratory. Also she conducts research in age changes of sella turcica, frontal and sphenoid sinuses.

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