Differential evolution of cerebral and cerebellar fossae in recent Homo: A new methodological approach.

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Résumé

The endocranium shows the influence of the shape and development of brain tissues and overall brain modifications. During the late Upper Pleistocene and Holocene smaller brains appeared (Weaver, 2005) and the higher position of endinion relative to inion might indicate changes in cerebellar and occipital lobes. In previous studies, the depths of the cerebral and cerebellar fossae were not specifically considered; new tools for quantitatively measuring these irregular, problematic curved areas need to be developed. This paper's main objective is to investigate to what degree have occurred changes in the fossae's depths of extant humans with respect to fossil Anatomically Modern Humans (AMH) and older *Homo* species. The proportions of the occipital and nuchal planes are compared measuring the inner and outer surfaces of the bone. Additionally, this paper proposes a quantitative geometric methodology based on endocranial landmarks that create a plane with which to measure the position of the deepest part of the fossa: it represents a curvature maxima –concavity- associated with local structures. The four points thus obtained could be framed in Bookstein's Type II landmarks (Bookstein, 1991), but without biomechanical implication. Through univariate, bivariate and multivariate analysis (Principal Components Analysis) of raw and size-corrected data we look at the differential evolution in recent *Homo* species, which present a more vertical occipital area than ancient fossils. Our results corroborate this derived trait; additionally, we observed a tendency towards a relative decrease in the profundity of the cerebral fossae and maintenance of the cerebellar ones.

Mots-Clés: occipital bone, cerebral and cerebellar fossae, recent Homo

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