



Physical Anthropology Section – 2008

H78 Critical Study of Observations of the Sternal Extremity of the 4th Rib

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The goal of this presentation is to present a critical study from the estimation of the age at death by the sternal extremity of the 4th rib was reported. Its objectives were to assess its precision and reproducibility with a view to refining it.

The method of estimation of the age in the death by the sternal extremity of the 4th rib does not appear to correspond to the current standards. This presentation will show the results of this study which are in favor of its improvement by a Bayesian approach.

Age estimation in cadavers may clarify issues with significant legal and social consequences for individuals as well as for the justice. Methods for estimating age must have been presented to the scientific community, as a rule by publication in peer-reviewed journals, clear information concerning accuracy of age estimation by the method should be available, and the methods need to be sufficiently accurate. The sternal extremity of the 4th rib was suggested as a means of estimating age-at-death by Iscan twenty years ago. All such subsequent studies have systematically tended to overestimate the age of young subjects' and to underestimate that of old subjects. Moreover, inter- and intra-observer variability has never really been checked. The present study sought to assess the precision and reproducibility of Iscan's method, with a view to refining it. Eleven observers made two assessments, at a two-week interval, of the morphotype of three components (depth, wall and edge) of 59 4th ribs harvested from caucasian males (mean age: 48 y; range: 16-94) during forensic autopsy. Parametric (variance and mean) and non-parametric (quartile) analysis identified non-consensus ribs, and enabled a simplified protocol, minimizing the impact of observer experience and enhancing the independence of variables, to be designed. A feasibility study was then conducted on this protocol in the form of a consensus study of 54 ribs by two observers. Partial crossed correlations between the 6 predictive variables proved slight ($r_{\min} = 0.003$, $r_{\max} = 0.41$) at age given. A small improvement in the correlation between \log_{age} and scores on these new variables as compared to the original ones ($r = 0.82$ and 0.78 , respectively) was also found. These preliminary findings bode well for improving Iscan's method by a Bayesian approach.

Age-at-Death, 4th Rib, Critical Study