Title: Sexual dimorphism of human sternum in a contemporary spanish population

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Abstract

Sex estimation is one of the first steps in Forensic Anthropology to identify human remains. In absence of the skull or the pelvis, any skeletal remain becomes fundamental for identification, especially in mass-disaster cases. The sternum is a potentially useful element in anthropological analysis with a high recovery rate in both forensic-and archaeological context. This study aims to develop classification functions for use in Spanish population. For this, sternum sexual dimorphism is studied in a sample of 105 individuals, known age-at-death, ancestry and sex, from San José Municipal Cemetery of Granada (Spain). Lin's concordance correlation coefficient was used to estimate intra-and inter-observer error. In discriminant analysis for estimating sex, cross-validation shows accuracy rates exceeds 90% for sternum body length and maximum width (91.8%), or total length with maximum width (90.7%). Isolated variables with higher accuracy rates are total sternum length (89.1%), and sternum body length (87%). Although there is compliance with Hyrtl´s Law, it is not useful for estimating sex in Spanish population. These discriminant functions have also been validated successfully in two samples from Portugal (Coimbra Identified Skeletal Collection – CISC, and 21st Century Identified Skeletal Collection – Santarém XXI): the variables with higher accuracy rates sternum total length with its maximum width (92.3% the correctly classified individual in the sample CISC; and 83.5% in the sample of Santarém XXI) and the sternum total length (92.1% and 78.5%, respectively). The discriminant functions achieved with the collection of the San Jose cemetery of Granada can be applied to current remains, provided that study