María Patricia Ordóñez Alvarez, 2011, T*he prevalence of Wormian bones in relation with Ancestry: A comparison between Caucasian and Mongoloid populations in the light of Artificial Cranial Deformation and Pathological conditions* . MSc Thesis, Cranfield Defence and Security, Forensic Modular Masters, Cranfield University.

Abstract:

The allocation of non-metric traits to specific ancestry groups has been a common practice in Forensic Anthropology and Physical Anthropology since 1905 (Parker 1905). However many of these non-metric traits have a complicated aetiology that has not been explored fully. Such is the case for Wormian bones, often used as an aid for ancestry allocation in biological profiles and commonly accepted as indicative of populations with Mongoloid ancestry (see Dolinak et al. 2005). The study of Wormian bones in relation to artificial cranial deformation (ACD) and the identification of Wormian bones in many disorders such as osteogenesis imperfecta (OI) and craniosynostosis suggest that there is more to understand about this non-metric trait than what has been made evident through population prevalence studies.

This project aimed to explore the link between Wormian bones, ACD and a number of pathologies in three collections: Sierra Norte-Ecuador archaeological collection (41 individuals), Haslar-UK historical collection (44 individuals) and SHARP-UK archaeological collection (120 individuals); from two ancestry groups, Mongoloid and Caucasian. Through the recording of craniometrical measurements and observations on Wormian bones, ACD and presence of certain pathologies, a series of databases were made and then interrogated by statistical tests such as the Spearman correlation coefficient calculation, the Kendall's tau coefficient calculation and the Kruskal-Wallis non-parametric test, as well as by creating graphical representations on frequency and percentage of prevalence of Wormian bones within different variables.

The results show no relation between Wormian bones and ACD, a possible link between Wormian bones and nutritional/developmental disorders and some genetic/hereditary pathologies. The relation between Wormian bones and ancestry however, when considered separate from the other two variables, remained unclear.

It is possible to conclude therefore that Wormian bones cannot be used as ancestry related non-metric traits, especially not for the purpose of identification between Native American and

European archaeological-historical populations, as there are multiple other variables - two of which are ACD (as a cultural practice) and pathological disorders - that can contribute to the occurrence of Wormian bones in an individual. Further research is needed to explore the nature of the relationship between nutritional/developmental disorders and Wormian bones as well as the implications of high indices of genetic disorders in a population when considering the prevalence of Wormian bones.

Download the manuscript [PDF]