

Musculoskeletal stress markers in Portuguese Late Neolithic population: What do they tell us?

Ana Maria Silva

Centro de Investigação em Antropologia e Saúde
Department of Anthropology, University of Coimbra
3000 - 056 Coimbra (Portugal)
amgsilva@antrop.uc.pt

Introduction

The daily life of ancient human populations continues to be of immense interest. In Portugal, human remains dated to the Late Neolithic are common and usually uncovered from collective burial places, containing a high number of fragmentary and commingled human bones.

This contribution includes the analysis of skeletal markers of occupational stress (MSM) in Portuguese Late Neolithic Populations.

Material

This study includes seven skeletal samples uncovered from Late Neolithic Portuguese collective burials (Figure 1), representing a minimum number of 698 adult individuals. The human remains were recovered with no or almost none anatomical connection due to the burial practices, post-deposition activities and excavations with old methodologies.



Figure 1:
1 - Dólmen de Ansião (DEA); 2 - Serra da Roupã (shelter) (SR); 3 - Pai Mogo I (vault chamber tomb) (PM); 5 - Cova da Moura (natural cave) (CM); 6 - Cabeço da Arruda (vault chamber tomb and uncertain) (CAI e CALL); 7 - Hipogeu de São Paulo (SP) (artificial cave); 8 - Hipogeu de Monte Canelas I (artificial cave);

Methods

- This analysis includes muscle/ligament attachment sites of upper (clavicles, scapulae, humeri, radii, ulnae) and lower (femur, tibiae, patella and fibula) extremities.
- The samples were pooled together and the analysis were made by individual bone;
- Evidence of MSM were scored according to Crubézy (1989).
- Statistical analysis were limited; the effect of age and bilateral asymmetry was not possible to test; Inferences about sex differences was also very limited.

Results and Discussion

→ This research detected a low level of MSM in Portuguese Late Neolithic Population. The few pathological alterations observed in the muscle/ligament attachment sites are largely robusticity markers (scored as ≤ 3).



Figure 2: Stress lesions MSM in costoclavicular ligament insertion of three right clavicle of Pai Mogo 1.

→ In the upper limb the highest scores were obtained for the costoclavicular ligament (Figure 2) followed by the *pectoralis major* (Figure 3); The use of this muscle and ligament is consistent with movements requiring an alternating rotary motion of the shoulder girdle, a movement that has been interpreted as the likely result of using a double-bladed paddle in a boat. All the samples are near the coast line so fishing would be an expected activity. However, the few isotopic results available indicates a mainly terrestrial diet.



Figure 3: Robusticity of pectoralis major insertion site of three right humerus of Pai Mogo 1. Scores from left are: moderate, absent and faint.

→ In the lower limb the highest scores were obtained for the patella ligament (Figure 4) and Achilles tendon (Figure 5), respectively 11% and 23% of the analysed bones displayed some degree of exostosis. The former is related to extension of the leg. The last one is responsible for plantar flexion of the ankle and is the primary motor for standing and walking on the toes as powers push off when a person runs or jumps. These data suggests a great mobility of these individuals. Previous studies revealed other indicators, as low femoral neck-shaft angle, that seems to indicate that these populations displayed a greater mobility that the one normally associated with agriculture.



Figure 4: Exostosis in patella ligament insertion of three left patella of São Paulo II.



Figure 5: Exostosis in Achilles tendon of a left calcaneum of São Paulo II

Final remarks

→ The poor preservation and incompleteness of Portuguese Late Neolithic commingled human remains prevents an accurate study of MSM. Even if it was not possible to confirm the daily activities of these human populations or to test sex differences or bilateral asymmetry, some trends were recognize, as the most utilized muscle/ligaments of the their upper and lower extremities.