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COMPARISONS OF THE SCAPULA IN YOUNG ADULT MEDIEVAL MALES: AN APPLICATION OF HRDLIČKA

ABSTRACT: Paired bones from King Henry VIII's flagship the Mary Rose are being compared with another medieval group of young adult males from England. Measurements used by Hrdlička have been adapted for the scapula. His ideas regarding the effects of musculature on the bone have also been utilized. It is hoped that this study will contribute to the debate on occupational related changes in the human skeleton.

KEY WORDS: Mary Rose — Scapula — Measurements — Rugosities.

INTRODUCTION

On the morning of 19th July 1545, King Henry VIII's flagship, the Mary Rose, sank just off Portsmouth, southern England. Of her crew of 415 men, only about 35 survived, the rest were trapped on board and drowned. The speed of the burial and the seabed conditions produced superb survival of all organic materials, including the human bone. The angle at which the ship came to rest (60° to the vertical and on her starboard side), and four tides a day sweeping across the wreck, produced total commingling of the skeletal remains. A minimum number of 179 individuals were recovered (40% of the crew), from which 92 fairly complete skeletons were derived.

During examination of the human skeletal remains, unusually high frequencies of certain pathological conditions were noted. These included os acromiale (Figure 1), which has already been reported on (Stirland 1984). It was also noted that the individuals from the ship are predominantly young (14 – 17 years; 18 – 25 years), all male and with a mean stature of 1.71 m. Many bones are very big and robust (Figure 2), and with very well developed rugosities, (Figure 3). Patterns of activity are known from the ship's roll and consist of the following: Soldiers 185, Mariners 200, Gunners 30, (Rule 1982, p. 27).

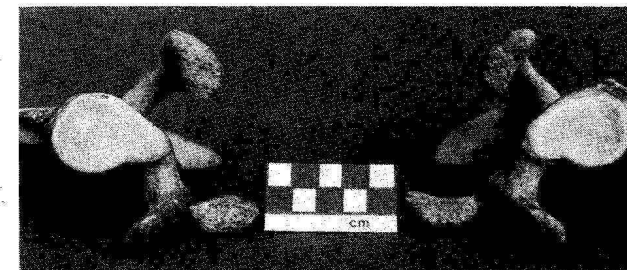


Figure 1. Bilateral os acromiale in a pair of scapulae.

Given the unusual combined circumstances of perfect preservation and known date, cause of death and activities, a research program is in progress to try to determine whether it is possible to postulate actual activities from changes in the bones.

MATERIALS AND METHODS

The research project which has been evolved is based on a study of skeletal asymmetry. Since the Mary Rose material is commingled, six (6) pairs of bones have

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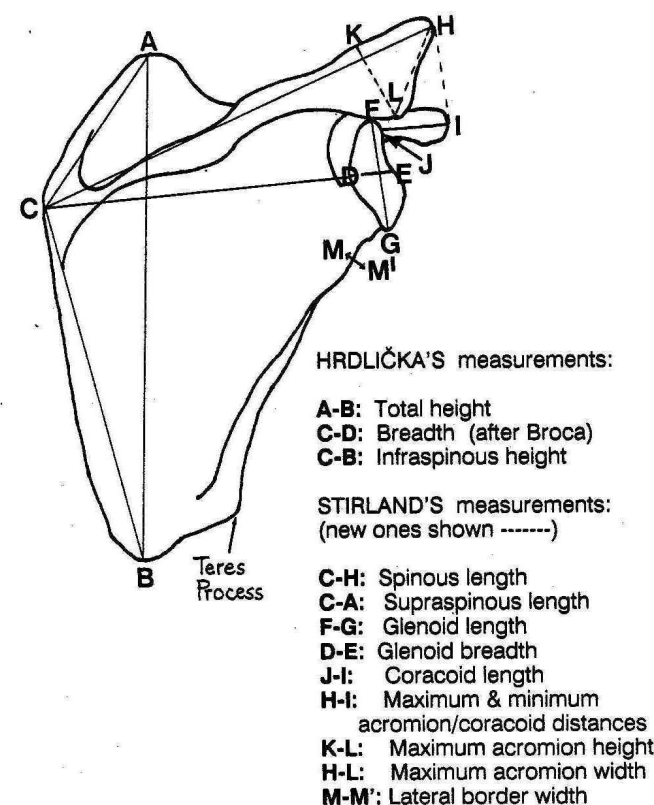
Figure 2. A large, robust scapula.



Figure 3. Very well developed rugosities.

been chosen for comparison, the scapula being one of them. The sample is so good that pairing of bones has been undertaken with confidence. For comparative purposes, another archaeological group of young adult medieval males is also being measured, the same pairs of bones being utilized.

Aleš Hrdlička produced a work of great importance on the scapula in both the juveniles and the adults (Hrdlička 1942). His observations embraced race, sex and side and included syntheses of other previous studies. His measurements were those devised originally by Broca (1878), to which he made some changes. In this present study, some of Hrdlička's measurements have been used, as have measurements by others, and some new ones have been added (Figure 4). One new index, the Acromial Index, has also been added.



HRDLIČKA'S measurements:

- A-B: Total height
- C-D: Breadth (after Broca)
- C-B: Infraspinous height

STIRLAND'S measurements:
(new ones shown -----)

- C-H: Spinous length
- C-A: Supraspinous length
- F-G: Glenoid length
- D-E: Glenoid breadth
- J-I: Coracoid length
- H-I: Maximum & minimum acromion/coracoid distances
- K-L: Maximum acromion height
- H-L: Maximum acromion width
- M-M': Lateral border width

Figure 4. Measurements utilized in the present study.

Hrdlička stated that the scapula „phylogenetically is almost entirely a muscular product, aside of its articular parts is completely dependent on the development and activity of its muscles, and in response to these, at all times of its existence, is adaptable in shape, size, strength, and most other conditions“ (Hrdlička 1942, p. 413). The scapula is also intimately involved in all the movements of the shoulder and upper arm, many of the muscles involved in these movements originating or inserting on the bone. Since any study of patterns of activity must include an evaluation of such insertions, an attempt is being made to evaluate the major areas of attachment on the scapula for this study. These include the medial and the lateral borders of the bone, and the acromion. Also being evaluated are the ridges which occur on the ventral surface in connection with the insertions of subscapularis. Lastly, Hrdlička identified a teres process as a projection occurring at the site of origin of teres major on the lateral border in some individuals, and related to the development of the teres muscular attachment (Figure 4). This is also being scored as present/absent.

SUMMARY

It is hoped that the study of the groups of paired bones in young adult medieval males will contribute to the debate on occupational related changes in the human skeleton. Hrdlička's contribution to the scapular terminology and his contention that the action of muscular activity determines the size and shape of the bone are already of great importance in this kind of study. It is a privilege to have been able to read his works and apply his methods.

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