THE
Rudyard
CONSULTANCY
Archaeological Services

DB 93

Report on One Inhumation from Cist 2 at Low Hauxley, Northumberland

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1. INTRODUCTION

This skeleton was recovered from an excavation carried out by Northumberland County Council at Low Hauxley in 1993. The skeleton was located in Cist 2. It was a single inhumation, dating from the Bronze Age. The skeleton was accompanied by a ceramic vessel, and some flints.

2. OSTEOLOGICAL ANALYSIS

2.1. METHODOLOGY

The skeleton was laid out with the bones in anatomical position in order to be studied. It was assessed for sex, age, stature, pathology and morphological anomalies.

Information was recorded on a purpose-built Microsoft Access database.

2.2. DETERMINATION OF SEX

The sex of a skeleton can be assigned according to morphological criteria; in particular by assessing features of the pelvis and skull, which display the most sexual dimorphism in humans. In addition, wherever possible, measurements can be taken of the vertical diameter of both femoral and humeral heads, as these dimensions have been demonstrated to provide a reliable method of sex estimation (Stewart, 1979:100, Pearson, 1917-1919:56).

No attempt should be made to assign sex to juveniles, as secondary sexual characteristics do not manifest themselves until puberty (Bass, 1987:19) and are not fully expressed until young adulthood. However, this individual appeared to display certain morphological characteristics, which made assessment of sex possible.

Although there were no apparent sexually diamorphic characteristics of the pelvis of this individual, the morphology of the skull suggested that this was probably a young man. The brow ridges, and the temporal ridges above the ears were beginning to show clear definition. The shape of the eye sockets was male (they were "television shaped"), as was the shape of the mandible (a classic Mills and Boon hero's square chin).

2.3. ESTIMATION OF AGE AT DEATH

A variety of criteria were employed to assign age-at-death to this individual. Age was estimated using a combination of factors, in order to minimize inaccuracy. As a general rule, the younger an individual was at death, the more possible it is to assign a precise age.

It is possible to age juveniles and sub-adults fairly precisely using a combination of dental development and degree of epiphyseal fusion (Sundick, 1978, Ubelaker, 1978, Brothwell, 1981).

The accuracy of age estimation depends largely on the completeness and extent of preservation of the individual skeleton. The dentition is often the best preserved feature. Although Lovejoy's attritional ageing scheme (1985) is based on prehistoric native American populations, the age estimates I have obtained from its application have closely corresponded with the figures from morphological features, where these were available.

The Suchey-Brookes system of age estimation using the pubic symphyses is a particularly accurate means of estimating the age of adults, but unfortunately cannot be used to age individuals below the age of approximately 16.

The stage of epiphyseal fusion of the long bones suggests that this individual was approximately 12 to 15 years old.

The dental development, in which all the adult teeth are fully erupted, except for the third molars, which are present but unerupted, suggests an age of 15-21.

The pubic symphyses suggest an age of 18.5 +/- 2.1 years.

Dental attrition suggests an age of 12-18.

When all these factors are taken into account, this individual's age can be estimated at 12-18. It is probable that he was at the younger end of this spectrum, perhaps 12-15 years old.

2.4. STATURE

The living stature of individuals can be estimated by taking measurements of the maximum length of the long bones, then applying these to the formulae calculated by Trotter and Gleeser (1952).

There are some limitations to this technique. The epiphyses of the long bones must be fused, eliminating the possibility of estimating the stature of sub-adults Long bone epiphyses begin to fuse at around 16 years (Brothwell, 1981), and after this age stature estimates are feasible.

Because the epiphyses of the long bones had not fused, it was not possible to estimate the stature of this individual.

2.5. NON-METRIC TRAITS

Non-metric traits are hereditary morphological features, which are not pathological, but are merely anomalies of development. In general, an individual would be completely unaware that they displayed these traits.

This individual has a metopic suture, which is a suture down the centre of the frontal bone of the skull. Babies are born with their frontal bone in two halves, but the two halves have usually completely fused by the age of two. Persistence of this suture is a fairly common non-metric trait.

Additionally, this individual has a pronounced number of ossicles at the lamboid suture. This means that the suture between the occipital bone at the back of the cranium, and the two parietal bones at the sides of the cranium contains a significant number of tiny bones. There is also an ossicle at the bregma, the junction between the lamboid suture at the back of the cranium, and the sagittal suture, which runs lengthways along the top of the cranium. These are also common non-metric traits.

3. PATHOLOGICAL ANALYSIS

3.1. PERIAPICAL ABSCESS

Caries (also known as "tooth decay") are caused by bacteria in the mouth metabolizing sugars, resulting in the production of an acid, which causes the demineralization of tooth enamel (Craig, pers. comm.), and eventual production of cavities in the tooth. The two most significant factors in the presence of caries are consumption of sugar combined with inadequate dental hygiene. Caries are almost universal amongst human societies where the diet contains high quantities of sugar (including honey).

Once there is a cavity in the tooth enamel, bacteria can penetrate the pulp cavity, eventually leading to the death of the pulp. The toxic products of dead tissue and bacteria diffuse out of the apical foramen of the tooth root into the periodontal ligament. This causes an abscess to develop, which presents as a cavity in the bone with a sinus through which pus can drain to the outside.

This individual has a large periapical abscess (approximately 8mm in diameter) associated with the lower left 1st incisor. It is visible as a hole in the front of the mandible. The bone around the interior of the cavity is smooth and "sclerotic" (hard), indicating that this is not post-mortem damage. An abscess of this size, as well as being extremely painful, could potentially lead to septicaemia (blood poisoning), which in the days before antibiotics, could prove fatal.

3.2. CALCULUS

Calculus is an accumulation of mineralized bacterial plaque on the teeth when oral hygiene is inadequate. It occurs with two distinct forms of distribution. *Supragingival* calculus is located around the gingival margin on the necks of the teeth, and is preferentially deposited in relation to the openings into the mouth of certain major salivary gland ducts (the parotid glands on the maxilla and the submandibular and sublingual glands on the mandible). On the other hand, *subgingival* calculus is located below the level of the gingival margin, and its distribution and extent correlates well with the presence and severity of inflammatory periodontal disease, which is a condition, which ultimately leads to tooth loss (Craig, *pers comm*).

This individual has supragingival calculus on the buccal surface of the upper molars, and on the lingual surface of the lower molars. This is probably associated with poor dental hygiene.

3.3. ENAMEL HYPOPLASIA

Enamel hypoplasia is a defect in enamel matrix formation caused by severe nutritional deficiency or disease during the first few years of life, when the permanent teeth are forming. Two thirds of cases are caused by systemic disturbances such as fevers during the first ten months of life. If enamel hypoplasia is present in the deciduous teeth this indicates that the stress occurred when the child was *in utero*, owing, for example, to maternal rubella infection or congenital syphilis (Craig, pers. comm.). Enamel hypoplasia appears as grooving or pitting on the crowns of the teeth.

This individual displays hypoplastic defects of the enamel of the upper canines.

4. SUMMARY AND CONCLUSIONS

This is probably the skeleton of a young man aged in his early teens, somewhere between 12 and 15. His dental development is advanced compared to his skeletal development, but this is quite common. The only diseases, which are identifiable, are a dental abscess and calculus, both of which were probably exacerbated by poor dental hygiene. There is also evidence of enamel hypoplasia, which indicates that he suffered from some form of severe stress (either dietary or pathological) during the first couple of years of his life.

This young man displays several skeletal anomalies, specifically a metopic suture, and pronounced lamboid ossicles at the back of the skull. However, these are not pathologies, and the young man would not have been aware that he had these traits.

There is no obvious indication of cause of death. However, this is very common, particularly in young people, who often die from acute infections, or from congenital soft tissue conditions which leave no evidence on the bone. It is possible that the periapical abscess may have lead to septicaemia, but this can only be speculative. The only thing that can be certain is that this young man would have been in a lot of pain.

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6. APPENDIX: SKELETAL RECORDING SHEETS