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REPORT ON THE HUMAN BONE - CROWDER TERRACE, WINCHESTER

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The skeletal remains from eight inhumation burials were presented to the laboratory for examination. The material varied in its condition from very poor to very well preserved bone but it was found that this might generally be attributed to the age of each individual: thus the infants were poorly preserved but the adults were in relatively good condition.

Examination of the bones from CT'74 Gr.6, Gr.7 and VR'75 Gr.412 showed some confusion of the material. However it was possible to establish that there were three individuals present, Gr.6 being a juvenile and the other two being infants. Some mixture of the infants probably still remained, therefore no detailed analysis was undertaken.

A detailed population analysis could not be justified for so small a sample but each individual was assessed for age, sex and stature and the bones and teeth were examined for any information with regard to the health status of people at that period in Winchester. Results for age, sex and stature for each individual are shown in Table 1.

Table 1 Age, Sex and Stature Results from Crowder Terrace

Burial No	Age (in years)	Sex	Stature (in centimetres)
CT'74 Gr.1	18-22	F	150 (c.4'11")
CT'74 Gr.2	9-11	-	-
CT'74 Gr.3	7-8	-	-
CT'74 Gr.5	0-3 months	-	53-54
CT'74 Gr.6	4-5	-	-
CT'74 Gr.7	0-3 months	-	55.0
VR'75 Gr.412	0-6 months	-	-
6SJT'80 Gr.1	30-40	M	174 (c.5'8")

AGE

Each individual was primarily assessed for age on the basis of size and general

development of the bones, (in the case of adults any instance of degenerative joint disease was noted). This enabled a more detailed estimate of age to be made by means of certain criteria.

For infants age was, for the most part, assessed on foetal diaphyseal bone length since it has been shown that this length in foetuses up to, and including, birth shows a high correlation with age (Stewart 1979). Infant skeletons were also examined for evidence of tooth and bone development, in particular the crowns of the molar teeth and the vertebrae, as a check on the assessment made by means of diaphyseal bone length. Of the three individuals classed as infants CT'74 Gr.5 and Gr.7 were most probably examples of natal or peri-natal mortality and VR'75 Gr.412 was most likely slightly older (up to six months).

For juveniles (up to the beginning of epiphyseal union) the most reliable method for estimating age was found to be dental development, and on CT'74 Gr.6 union of the three segments of the vertebrae was also used.

For the one sub-adult present in this population sample, CT'74 Gr.1, age was established by means of dental development (root apices) and by epiphyeal union.

The only full adult present was 6SJT'80 Gr.1. This individual was aged by means of the pubic symphysis and dental wear was used as a comparative estimate.

SEX

Sexing of infants and juveniles was not attempted owing to the great difficulty of sexing such bones, the unreliability of the methods that are available and the size of the sample involved. For CT'74 Gr.1 and 6SJT'80 Gr.1 sex was

assessed by both metric (objective) and non-metric (subjective) means where possible, although it should be emphasized that an increase in the number of methods used does not necessarily indicate a more accurate estimate but merely provides a check in dubious cases. Both of the above individuals were sexed by means of the visual examination of the pelvis, skull and general size of the bones, In addition the vertical diameter of the femoral head could be measured on 6SJT'80 Gr.1. There was little doubt as to the attribution of sex in either example.

Stature

The estimation of stature was confined to the infants, sub-adult and adult. In juveniles the correlation of diaphyseal bone length with stature is too low for assessment of height. The tables of Stewart (1979) were used for infants and of Trotter (1970) for the sub-adult and adult.

The Dentition

Table 2. Primary classification of the Dentition at Crowder Terrace

Deciduous Dentition	Mixed Dentition	Permanent Dentition
CT'74 Gr.7	CT'74 Gr.2 CT'74 Gr.3 CT'74 Gr.6	CT'74 Gr.1 6SJT'80 Gr.1

No data was available for either CT'74 Gr.5 or VR'75 Gr.412.

The deciduous dentition of CT'74 Gr.7 was only represented by the tooth buds of two deciduous molars therefore no analysis was made of these teeth.

The mixed and permanent dentitions were all analysed for wear of the occlusal surfaces, caries, abscesses, occlusion, mal-alignment of teeth, tooth absence or reduction in size, periodontal disease, enamel hypoplasia and calculus deposits.

Dental wear reflects the age of the individual and the influence of attrition and abrasion on the teeth. In this population sample wear was used as a secondary ageing procedure only since it was found that there was insufficient data for analysis of any evidence for rates of wear, diet etc, except to show that younger individuals showed less wear than older in both categories of mixed and permanent dentitions.

Table 3. Distribution of Carious Lesions at Crowder Terrace

Burial No	Tooth/teeth Involved		Location on Tooth	Size of Lesion
	Right	Left		
CT'74 Gr.3	$\overline{dm^2}$	dm'	Distal, cemento-enamel junction	Large
			Distal, occlusal surface	Small
	$\overline{M1}$	$\overline{M1}$	Occlusal	Large
			Occlusal	Small
CT'74 Gr.1		PM1	Distal Occlusal	Small
		PM2	Medial, Occlusal	Small
6SJT'80 Gr.1		$\overline{PM2}$	Occlusal	Large

There were no carious lesions observed other than those listed above. It was impossible to judge whether the destruction of two further teeth on 6SJT'80 Gr.1 could be attributed to caries or to some other cause.

There were two apical abscesses present on 6SJT'80 Gr.1: a small example on the maxillary right first premolar and a larger on the left mandibular second premolar (see Plate 1). The latter instance was probably associated with the carious lesion on the tooth.

Occlusion could be recorded for two individuals only, in both bite was found to be normal.

There were no cases at all of tooth crowding or absence. There was one case, CT'74 Gr.1, of extreme reduction in the size of the maxillary third molars

(see Plate 2), and on 6SJT'80 Gr.1 the third molars were very small, being only just tricuspid.

Periodontal disease was present in all the dentitions observed but no severe cases were found.

Enamel hypoplasia was recorded as present on all individuals with the exception of CT'74 Gr.1. The age at which the interruption of growth occured can normally be assessed and on all these examples it was found to have been at 3 to 4 years. It is therefore more likely that the cause was dietary deficiency or childhood disease than any ante-natal interference in development.

Calculus deposits were found on the permanent dentitions only and these were slight.

Population Variability

A record was made of the morphological and metrical features of this group but on so small a sample no analysis of the data in isolation could be justified. The information was listed for possible comparision with other population samples either from Winchester or from this period at a later date. However with regard to the distribution of the material it is perhaps interesting to note that the sample, with the exception of 6SJT'80 Gr.1, consisted of infants, juveniles and one sub-adult female.

Pathology and Other Anomalies

Individuals were examined for evidence of trauma, degenerative joint disease, infection or disease, nutritional deficiency and any other anomalies.

There were no examples of traumatic injuries (eg fractures) observed from

Crowder Terrace.

Observations were made for the presence of degenerative joint disease (osteoarthritis, vertebral osteophytosis etc) but none was found in this sample. On 6SJT'80 Gr.1 there was some ossification of the muscular insertions on the lesser trochanters of the femora and on the radial tuberosities, but there was no obvious cause for this and it can only be assumed that it was as a result of, in part the ageing process and in part stress[1] (Plates 3 and 4). There was some further evidence for stress on the same individual on the medial borders of the tibiae (increased calcification). It is probably that these findings are not, strictly speaking, "pathological" in either instance.

There was some slight evidence for periosteal deposition of bone in both CT'74 Gr.3 and Gr.5 but radiography of these individuals suggested that in neither was the cause haematogeneous (ie instigated by blood-borne infection). In Gr.3 the periostitis was confined to the tibiae and fibulae with some slight involvement of the distal femora so it is suggested that a localized infection was involved. In Gr.5 the infection could have been in utero and associated with maternal disease but it is not possible to assess this on the information available.

There was no further evidence for disease or infection at Crowder Terrace.

Cribra Orbitalia

Both CT'74 Gr.2 and Gr.3 exhibited cribra orbitalia in both orbits (see Plate 5);

[1] "Stress" is here defined as any abnormal pressure or exertion, such as work.

in the former this was slight "porotic" and in the latter it was more marked "cribrotic". No other cases were observed. The aetiology of cribra orbitalia is still largely unclear however it is generally accepted that some kind of nutritional deficiency in the diet is a major factor (Nathan and Haas (1966), Carlson (1974), Steinbock (1976)). Further the high incidence of the condition in infants and juveniles has been noted and a post-weaning iron deficiency in the diet proposed as the root cause. The incidence in these individuals is not of great significance owing to the size of the sample involved but it is of interest to note that there was probably some nutritional deficiency present at that period.

Dysplasia of the Hip

CT'74 Gr.1 demonstrated an example of a complete dysplasia (dislocation) of the right hip. The left hip was apparently normal, see Plates 6 and 7. The right femur had been displaced upwards on to the dorsum of the ilium and a superficial cavity in the external iliac fossa had been formed as a "secondary socket". The acetabulum was flat and shallow. The right patella was notched as a result of the disabling nature of the deformity (the upward movement of the femur would have led to shortening of the whole limb, relative to the other - this is well illustrated by the grave plan). It may be noted that although a cripple the individual concerned was probably not further discomfited (by pain) - see findings of Hart (1952). The malformation of the acetabulum suggests that the cause of this injury was congenital but spontaneous or pathological dislocation cannot be entirely ruled out. However the absence of any other signs of injury or disease on this skeleton indicate that congenital dislocation is the more likely cause.

Conclusion

On so small a population sample it is not feasible to draw significant conclusions but it is perhaps interesting to note that there is a general

lack of evidence for disease, infection and injury and that the indications of dietary deficiency, such as they are, suggest that although there were some nutritional inconsistencies at Crowder Terrace none were of a severe nature, such as to cause major illness or disability.

References Mentioned in the Text

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List of Plates

1. 6SJT'80 Gr.1: Abscess on the left mandibular second premolar.

2. CT'74 Gr.1: Reduction in size of the maxillary third molar teeth.

3. 6SJT'80 Gr.1: Ossification of the Muscular Insertion: Right Femur.

4. 6SJT'80 Gr.1: Ossification of the Muscular Insertion: Right radius.

5. CT'74 Gr. 3 : Cribra Orbitalia.

6. CT'74 Gr.1: Dysplasia of the Hip Joint: Right Innominate.

7. CT'74 Gr.1: Left Innominate for Comparison with Plate 6.