

PALEOPATHOLOGICAL STUDY OF THE COMMUNITY EXHUMED FROM THE HIPOGEU OF MONTE CANELAS I (Alcalar, Portugal)

Ana Maria SILVA

Eugénia CUNHA

Departamento de Antropologia

Universidade de Coimbra

INTRODUCTION

The great megalithic necropolis of Alcalar (south of Portugal, figure 1) dated from the Neolithic and Chalcolithic is known since the end of the last century. In 1991, another funerary monument was discovered: the Hipogeu of Monte Canelas I. In this collective grave, two burial levels were found, separated by a layer of limestone, resulting from the collapse of the ceiling. The three datations available, all from the lower level, are around 4400 cal B.P. years.

With the exception of 5 primary burials found in the lower level, all the human bones were found dispersed along the monument.

DEMOGRAPHY

The human remains recovered from this funerary monument, corresponding to a minimum number of 171 individuals, respectively 147 and 24 individuals for the lower and upper level, includes adults, from both sexes, and non adults. Due to the low number of individuals of the upper level, only some demographic remarks about the lower level are made.

Due to poor preservation of the most reliable bones to sex determination of the adults, the talus (following Silva, 1995) was chosen for this purpose, since it was relative well preserved and represented. From the adult group, of those who could be sexed (n = 53, 55 % of the adults), 71,7 % are female and 28,3 % male. The low number of possible diagnosis rather than true demographic components may be responsible for this results.

Around sixty two per cent of adults could be aged while 38 % could only be determined as adults. Of the aged adults, the greatest number of individuals seems to died in the 20-30 year age category (30 %) while 28,6 % survived beyond 50 years. Of the exhumed group, 34 % are immature individuals. The greatest proportion of children are between 0-4 years (50 %) (SILVA, 1996).

PATHOLOGIES

Dental diseases:

The study of dental attrition and the different dental pathologies revealed several aspects of the diet of this Portuguese population. Although the number of permanent tooth recovered from the two burial levels were very different, respectively 206 and 988 for the upper and the lower funerary level, the results were very similar. The moderate dental attrition (mean = 3,31, following SMITH, 1984) suggests a not very abrasive diet resulting probably from the ingestion of dry fish, shellfish and the use of grinding stones on grains.

The high frequency of caries (11,5 % and 9,2 %, respectively, for the lower and upper level) suggest that fermentable carbohydrates were an important component of the diet of this people, probably in the form of honey and fruits of the Mediterranean forest as, for example, carobs and figs.

The high levels of calculus (34,5 %, upper level; 32,1 %, lower level) indicates that proteins, in form of meat from domestic or hunted animals, or starch, abundant in seeds, were also an important part of the diet. In 75 % of the cases the deposits were mild (level 1, according to MARTIN e SALLER, 1956 in LAMARQUE, 1991).

The *ante-mortem* tooth loss (9,8 % - lower level), particularly from the posterior dentition, seems to be the result of the high levels of caries.

Only 5 abscesses were reported (all in maxillas from the lower level). In one subject, the abscess can probably be attributed to carie as a direct cause while for the remaining it was not possible to suggest an aetiology.

Infectious lesions

Non-specific bone inflammation indicated by periostite is a common archaeological finding. It is caused by a wide range of organisms, being difficult to interpret. Thirty one long bones (n = 412) exhumed from the lower level of MCI displayed periosteal lesions unrelated to traumatic events. All age groups were affected. The most frequent location for the lesions to occur was the femur for adults and tibia for non adults. All lesions were remodelled.

Degenerative joint diseases

One of the commonest form of degenerative joint diseases is osteoarthritis. Globally, this kind of disease is low in the appendicular skeleton of the present sample. In the lower level of MCI, the right sternoclavicular (67 %) and the right acromioclavicular (50 %) joints were the most common sites to occurrence, followed by the right glenoid fossa (25 %). This seem to indicate that this joints were particular under mechanical stress in the daily routine chores and occupations of this community.

More severe were the lesions recorded for the spine. The frequencies of osteoarthritis in the vertebrae bodies is more severe in the lumbar region, (50 %), followed by the cervical (32 %) and then the thoracic ones (19 %). In the articular facets, it was the cervical vertebrae (19 %) which showed greater frequency of osteoarthritis, followed by the lumbar (19,5 %) and thoracic ones (16 %). Carrying containers on the head could have been responsible for the high occurrence of osteoarthritis in the cervical or neck vertebrae.

Tumours:

Most of the primary bone tumours seen in bone, as osteomas, are well know in archaeological skeletons. Osteomas are benign tumours and their exact aetiology is unknown. One "button type" osteoma (with 1 cm of diameter) was evident in a female adult skull. This woman would have been unaware of its existence. Two more cases were found in the literature for Portuguese series from the end of the Neolithic or Chalcolithic: one in a left parietal from an adult male skull (25-30 years) from the cave of Lugar do Canto, Valverde (LEITÃO *et al.*, 1987) and in an occipital from an adult from the artificial cave of São Pedro do Estoril II (SILVA, 1993).

Trauma:

In MCI depressed skull fractures were recorded in two individuals, on an adult male frontal bone and on a right parietal from a young adult. In the postcrania only 4 metacarpals (probably belonging to the same individual) display healed fractures. The low number and sites of the injuries suggest that they are probably the result from accidents rather than of intentional violence.

Osteoporosis:

Osteoporosis is, today, accepted as the most common of the skeletal metabolic diseases. Due to problems in diagnosis, relatively little is know of its frequency rates in past population. Ageing is the most common cause of osteoporosis but general factors such as diet, sex, lack of exercise, prolonged lactation, high number of pregnancies, among others, all have their part to play (ROBERTS and MANCHESTER, 1995).

In the lower level of MCI, four lumbar vertebrae show compression of the vertebral body probably due to osteoporosis. Two, belong to a female primary burial, with an age at death of $42,5 \pm 15,5$ years (MASSET, 1982) while the remaining two, were recovered from the ossuary (figure 1).

Malformations of the spine:

Two cervical vertebrae (axis) present signs of scoliosis (figure 2), apparently not congenital but caused by trauma, namely a vertical force that induced hyperflexion injury, as for example, carrying loads on the head (LOVELL, 1994; MOLLESON, 1994). We were unable to identify other reports of scoliosis in Portuguese Population from the same period of time.

Stress indicators:

Only 2,2 % of the permanent teeth have enamel hypoplasia. The most common age of occurrence for these defects is between the age of 4 and 6 years (GOODMAN and ROSE, 1991). The maximum number of lines found in one tooth (canine) was 4 (figure 3). This frequency is lower than the values reported for other coeval Portuguese populations, like the 55 % for the permanent teeth of São Pedro do Estoril (ARAÚJO, 1996) and 8,3 % for the teeth of Tojal de Vila Chã (DUARTE, 1993).

Discussion:

These people appear to be remarkably free of diseases, with low frequencies of enamel hypoplasia, traumatic and infection lesions. The degenerative joint diseases were also rare in the appendicular skeleton and of low severity. The areas that seem to be under the greatest stress were the pectoral girdle articulations and the spine, in particular the cervical segment, which could be due to the carrying of heavy loads, including on the head (LOVELL, 1994; MOLLESON, 1994).

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ICONOGRAFÍA

Pósters

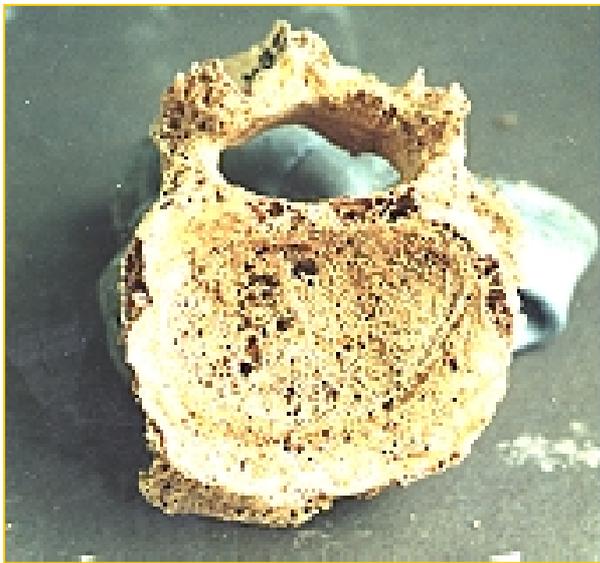


Figure 1: Compression of a lumbar vertebral body probably due to osteoporosis.



Figure 2: Evidence of scoliosis in an axis from



Figure 3: Chronological linear enamel hypoplasias (4) on a permanent mandibular canine from the lower level of MCI.

