Archaeoanthropological Study of the Necropolis on Via A. da Brescia – Rimini (4th-9th C. A.D.)

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Introduction

The necropolis examined in the present study was excavated in Rimini in 2009 (Maioli, 2009). It occupies the area of the park opposite the "XX Settembre" schools in Via A. da Brescia. The 77 graves exhumed cover a period of time ranging from the 4th to the 9th century AD and differentiate into five main types: in amphorae, in "Capuchin" or tile tent tombs, in earthen pits, in masonry coffins and semi-structural with tiles. Only 69 graves were investigated, two of them are double so that the sample collected comprises 71 individuals in total. The poor state of preservation of eight of them did not allow us to perform any relevant examination. The paleodemographic analyses were undertaken by Gugnali et al. (this volume) and are fully described elsewhere. The purpose this study is to reconstruct the health profile as well as the diet of the population sampled.

Materials and Methods

Out of the 63 studied individuals, 28 are adults (14 males, 9 females and 5 indeterminate) and 35 are subadults.

In order to frame the sample's health status, the most common lesions (Ortner, 2003) were investigated, including both osseous and articular lesions and pathologies affecting the oral and dental system, e.g. tooth wear (Arnold et al., 2007), dental diseases and the incidence of calculus (Hillson, 1996). Paleonutritional analyses were carried out on 44 individuals (28 adults and 16 subadults) by means of analysis of trace elements (As, Ba, Cd, Ca, Co, Cr, Fe, Mg, Mn, Ni, Pb, Cu, Se, Zn, Sr) using mass spectrometry ICP-MS on samples of cortical bone taken from the femur and/or the tibia.

Results

The distribution of the lesions observed in the sample is presented in Fig. 1. Periostitis is certainly the dominant pathology observed among the 28 adults of the necropolis as 75% of them exhibit this type of lesion. The high presence of porotic hyperostosis on skulls (32.1%) and cribra orbitalia (17.8%) is associated with an equivalent proportion of enamel hypoplasia that affected circa the third of the overall population (32.9% in adults and 33.3% in subadults). Half of the adult sample (53.6%) show evidence of slight to severe musculoskeletal stress markers (MSM). They are mainly located on the lower limbs and males exhibit the highest prevalence (77.7%).
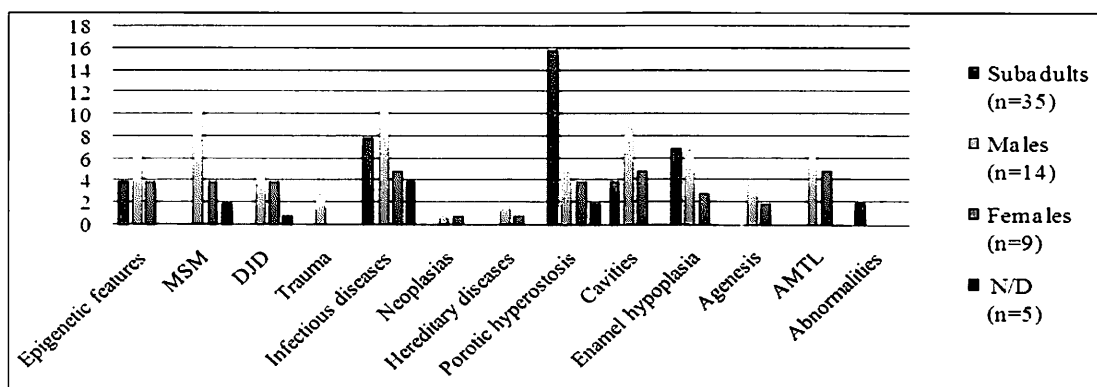

Fig. 1. Distribution of the pathological lesions observed in individuals from the late antiquity/medieval necropolis from Rimini (Via A. da Brescia).
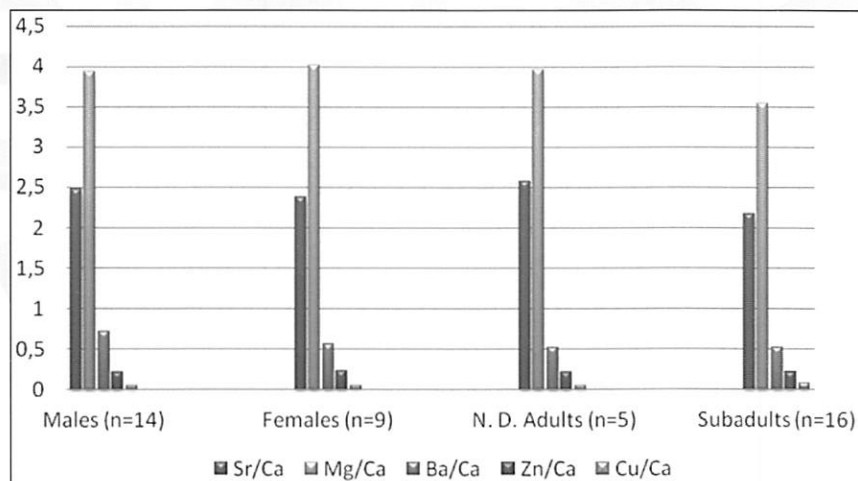
Fig. 2. *Distribution of the concentration of trace elements, normalized with respect to the calcium concentration, in individuals from the late antiquity/medieval necropolis from Rimini (Via A. da Brescia).*

Moreover 42.9% of the adult population is suffering from degenerative joint disease (DJD), observed similarly in both sexes. Finally, two third of the individuals exhibiting at least one of the epigenetic features - of which the supraorbital incisura is the more frequent - are males. Out of the 25 adult dental remains examined (461 permanent teeth), half presented at least one cavity and ante-mortem tooth loss (AMTL), while tooth wear and calculus show limited incidence in either of the sexes. Enamel hypoplasia, on the other hand, appears to be common, mostly affecting males (70%) than females.

The determination of trace elements performed by mass spectrometry ICP-MS on samples of cortical bone is shown in Fig. 2. The concentrations of trace elements are normalized with respect to the calcium concentration, in order to reduce post-mortem degradation effects (Bartoli and Bacci, 2009). The examination of trace elements revealed medium to low Zn, suggesting a low intake of offal, entrails and meat in general. Indeed, the low contribution of the protein component suggests its scarcity in the daily diet (Blakely and Beck, 1981). Conversely, medium-high values of Sr, often superior to 2.5-3 ppm, indicate a predominant intake of plant products. The values of Ba, which appear to be in the norm, confirm the vegetarian diet. In addition, the rather good concentration of Cu suggests the important contribution that fish products such as molluscs and small fish may have had.

Conclusions

The anthropological data emerging from this study suggest that the lifestyle of the population may have been precarious. Indeed the high incidence of porotic hyperostosis not only observed in adults but also and mainly in subadults, associated with the presence of enamel hypoplasia indicates a childhood characterized by stress caused by disease or scarcity of food. High frequencies of

DJD and MSM also suggest hard living conditions, that may have been harder in males than in females, suggesting thus some gender division of labour. Poor living conditions are confirmed by the prevalence of carious lesions and the trace elements analysis that suggests that the population sampled tend to have a poor diet, in which the prevalence of plant food is clearly higher than the meat intake.

Acknowledgements

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