Rib lesions and other signs of infections in non-adults from the Medieval necropolis associated with the São Martinho Church (Leiria, Portugal)

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Introduction

The area of the former São Martinho church (13th-16th centuries AD), in Leiria town, was excavated in 2000/1. During the fieldwork, 157 skeletons, 63 from sub-adults and 94 from adults (from both sexes), and commingled bones were exhumed. The primary burials were studied by Garcia (2007). This study aims to discuss the differential pathology of the pathological lesions suggestive of infections visible in the sub-adult individuals.

Sample and Methods

Nine sub-adults (out of 63, or 14,3%) are the object of this study. Age at death was estimated by deciduous and permanent tooth length (Liversidge et al., 1993; Liversidge, 1999), diaphyseal lengths and epiphyseal fusion (Scheuer and Black, 2000).

All bones were macroscopically observed and the differential diagnosis was performed.

Results and Discussion

The 9 sub-adults under analysis have ages ranging from ca. 2 to 17 years old. Despite studies in identified sub-adult individuals linking these lesions with pulmonary diseases, such as tuberculosis (Santos and Roberts, 2001; Matos and Santos, 2006), its presence is not conclusive for a definitive diagnosis. The same is valid for the new bone formation in the visceral surface of the scapulae.

Left scapula from an adolescent (Sk. 108) showing bone reaction on the visceral surface. This individual also has slight bilateral cribra orbitalia and dental caries.

Sk. 8 is a ca. 10 years old child. The skull shows bilateral cribra orbitalia and porotic hyperostosis, active in the right parietal (ca. 61x25mm). Deciduous teeth have caries, and permanent teeth shows enamel hypoplasia and dental calculus. Vertebral column: the inferior articular facets of the atlas and the superior ones of the axis are partially destroyed due to disease process; 2 cervical and the thoracic vertebrae have lytic lesions in their bodies; the bodies and the articular processes of 2 thoracic vertebrae are fused; the lumbar column is poorly preserved but lytic lesions were identified.

Upper ribs: present bilateral swelling of the vertebral end. One left rib has the diaphysis with a lytic lesion and bone formation. Upper limb: proximal epiphysis of the left humerus is bigger than the right, and the right one, and have a bone bridge in the medial plan. Lower limb: periosteal reaction is visible on the diaphysis of the left femur, proximal part of the right femur, right tibia and fibula, and metatarsals.

These lesions resemble the rare form of cystic tuberculosis of the bone. Most of the clinical cases are in the metaphyses of long bones and multicystic and multifocal lesions were more common in the past (Rasool et al., 1994). The radiological examination is planned to evaluate this possible diagnosis.

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Final comments

The studies of sub-adults individuals from past populations are less common than adults but the good state of preservation of this sample as well as a careful excavation allowed the analysis.

According to documentary sources, infectious diseases were frequent in medieval urban population. This work added evidence to the small number of cases reported in the Portuguese paleopathological record. To check whether the observed changes resulted from M. tuberculosis infection it is planned to test the bones for sDNA.

Acknowledgements

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References

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Age group Individual number N %
Infants (0-3 y. o.) 26, 40 2 22.2
Children (3-12 y. o.) 8, 18, 62, 72, 130 5 55.6
Adolescents (> 12 y. o.) 100, 108 2 22.2

Five sub-adults, from 57 (or 8.8%) that preserved at least part of their ribs, present new bone formation in the visceral surface of the ribs.

<table>
<thead>
<tr>
<th>Sk. #</th>
<th>Present</th>
<th>Affected</th>
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<th>Side</th>
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<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>Left</td>
<td>Right</td>
</tr>
<tr>
<td>18</td>
<td>23</td>
<td>4</td>
<td>17.4</td>
<td>Vertebral end</td>
</tr>
<tr>
<td>40</td>
<td>11</td>
<td>3</td>
<td>27.3</td>
<td>Vertebral and sternal ends</td>
</tr>
<tr>
<td>62</td>
<td>24</td>
<td>3</td>
<td>12.5</td>
<td>Vertebral end</td>
</tr>
<tr>
<td>100</td>
<td>24</td>
<td>2</td>
<td>8.3</td>
<td>Mid-shaft</td>
</tr>
<tr>
<td>130</td>
<td>15</td>
<td>2</td>
<td>13.3</td>
<td>Mid-shaft</td>
</tr>
</tbody>
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Left forearm: ulna with swelling and porosity on the proximal part. The distal end is missing.

Drawing of the left elbow showing bone destruction and the formation of bone spiculae.

Left rib with a lytic lesion, ca. 18x10mm.