Introduction

The sacroiliac (SI) joint is one of the most complex articulation and for long questioned as to anatomic classification, mobility and pathology. Clinical studies are often limited by the constraints of the roentgenogram analysis. The SI ankylosis has been reported in relation to muscular-skeletal diseases, e.g. spondylarthropathies (SpA) and DISH; but also as a common finding on the elderly, specialty males, with no pathological implications. On bioarchaeology there is paucity of research on SI ankylosis, however, the assessment of the typology and palaeoepidemiology are pivotal to a better understanding of the processes underlying this condition.

- Macroscopic evaluation of SI ankylosis. Cases without complete bridging excluded
- Recording parameters: typology (figure 2a and 2b) - para-articular (PA) and intra-articular (IA) differentiated according to Dar & Perlrothz (2006), Dar et al. (2007)7; laterality: location - proximal, ventral, distal and dorsal
- Statistical analysis: Pearson Chi-square (p²), Mann-Whitney (U), Linear regression (R²). Significance of difference in p<0.05
- A control group (n≤52) was selected randomly amongst those without SI ankylosis, in order to investigate the relation between SI ankylosis and etiologic factors
- Diagnostic criteria for SpA and DISH according to Rogers & Waldron (1995)24

Results

- SI ankylosis affected 5.2% of the skeletons, mostly by para-articular (PA) form (table 1)
- The overall strong male predominance was imputed by PA, while there was a majority of females affected by intra-articular ankylosis (table 2)
- The bilateral affection was less common (table 1)
- Left (n=7) and right (n=8) SIJ side location did not differ statistically (p=0.451)
- Complete extension of the fusion was more frequently noticed (21.5% (1/26)) at the mainly involved location was the proximal area of the SIJ (80.0% (23/28))

- The lesions were present only in older age categories, with absence of cases under 40-49 years (figure 1, represented by the orange bar). The regression analysis revealed (r²=0.6003) an almost linear increase of the lesion prevalence with age above (figure 3E)
- The mean age of death of the group with SIJ lesion (18.5, SD=12.1) was significantly higher than without SIJ fusion (60.8, SD=18.7, p=0.02). See also figure 3a.
- Differences on mean age at death did not reached statistical significance when comparing PA and IA cases (70.3, SD=12.9; 66.4, SD=8.0; p=0.276). See also figure 3a

Discussion and Conclusion

- Our results lend support to other studies22,23,24,25 (table 2) that point to a sex bias towards males and a strong age correlation. On the present study, the male predominance occurred solely for the PA ankylosis, the most common form. Hormonal and anatomic differences, in terms of SIJ mobility, between sexes were suggested as main underlying factors.22,23,24 SIJ ankylosis is also considered a phenomenon consequent from aging.22,23,24 However, due to the noticed association between PA and DISH, a disease twice as common in men and more prevalent on elderly,23,24 it should not be disregarded as an influence on the overall epidemiological profile of the SIJ fusion
- The highly concorrent occurrence of SIJ fusion and phenomena of generalized axial enthesis bone proliferation, DISH and SpA, suggests an important interplay between these conditions
- Segregation by typology of ankylosis (IA and PA) should be emphasized on anthropological studies
- SI ankylosis in other diseases (infections, other inflammatory arthropathies or paralysis27) were clinically reported but are rarely considered on palaeopathological diagnosis

Palaeoepidemiological study on the Identified Skeletal Collection from the Museu Bocage, Lisbon, Portugal

Human Identified Skeletal Collection from the Museu Bocage (NAMH, Lisbon, Portugal)

- 496 adult (≥20 years) skeletons with preservation of the SIJ
- Decreased between the years of 1881 and 1959
- Demographic characteristics of the sample are described on figure 1
- No statistical difference between the percentage of males and females (p=0.127) on the total sample
- Prevalence of older age categories (Mean age: Total= 62.1, SD= 18.5; Male= 57.5, SD= 17.2; Female= 64.5, SD= 19.0; p<0.001)

Table 1. Overall prevalence and pattern of distribution by sex.

<table>
<thead>
<tr>
<th>SIJ</th>
<th>Total</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>With fusion</td>
<td>26</td>
<td>5.2%</td>
<td>13</td>
</tr>
<tr>
<td>IA</td>
<td>5</td>
<td>1.0%</td>
<td>4</td>
</tr>
<tr>
<td>PA</td>
<td>21</td>
<td>4.2%</td>
<td>19</td>
</tr>
<tr>
<td>Bilateral</td>
<td>17</td>
<td>3.4%</td>
<td>13</td>
</tr>
<tr>
<td>Without fusion</td>
<td>670</td>
<td>13.4%</td>
<td>551</td>
</tr>
</tbody>
</table>

Acknowledgments

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