ORAL HEALTH IN A 15-16TH LEPROSARIUM
SAMPLE FROM LAGOS (PORTUGAL)

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the Valle da Gafaria archaeological site

In 2009, Dryas team performed an excavation at Valle da Gafaria (Lagos, Portugal), a site located outside the medieval walls of the city. The site revealed city fortifications, namely a modern leprosarium (Gafaria). Until now, Lagos leprosarium was only known through historical documents, which refer to the beginning of its construction by local residents in 1490. In the 16th century, geocultural events led to the renewal of the city’s defensive structure and consequent demolition of its structure.

During excavation, three main buildings were identified, the burial area being found further apart. At that time, leprosy sufferers had to remain outside the city walls both during life and after death. In fact, their inhumations among the healthy individuals were forbidden since 1175’s Rome Lateran Council.

Aims

Considering that leprosy sufferers usually tend to exhibit inflammation of their palatal surfaces and loss of the anterior maxillary teeth (Manchester, 2002; Ortner, 2003; Boldsen and Freund, 2006), the aim of this study is to investigate the oral health status of these individuals by means of dental caries, periapical inflammation and ante-mortem tooth loss analysis.

Material and methods

In all, 12 adult individuals were examined from this leprosarium. The archeoanthropological analysis performed during fieldwork gathered information about the state of preservation, mortuary practices, biological profile, and pathological condition of these individuals. However, severe damage to the archaeological record occurred before field operation, leading to significant loss of skeletal remains and, therefore, fading our interpretation capabilities. Seven individuals presented skeletal evidence compatible with a leprosy diagnosis. Among others, these cases include abnormal bone formation and structure as well as osteolytic lesions with sclerotic margins. Rheumatoid arthritis remodeling was also observed, being the most striking example recorded on individual 5.

Of the 12 examined individuals, only 7 presented maxilla and/or mandible, constituting therefore the sample hereafter referred and described.

Cavities were recorded according to their site of initiation as proposed by Hillson (2001). With respect to periapical bone loss, the Dias and Taylor’s (1997) criteria were used. Finally, locations of ante-mortem tooth loss were identified when the alveolus was partially or fully resorbed.

Atrophy of the alveolar process on the premaxilla was recorded according to the recommendations by Boldsen (2008).

Results

Altogether, 188 tooth positions and 128 fully erupted permanent teeth were examined. Of the observable sockets, 13 (6.9%) teeth were lost post-mortem and 28 (13.5%) teeth were lost before death.

Dental caries

- 27.1% (37) individuals had carious lesions
- If only cavitated lesions are considered, this value drops to 57.1% (47)
- 56.4% (61/107) teeth were carious
- 43.6% (48/107) teeth were sound
- If only cavitated lesions are considered, this value drops to 15.8% (22/140)
- From the 85 carious teeth:
  - 11.8% were located on the maxilla
  - 8.6% were located on the mandible
  - Of the 85 carious teeth, 38.1% were sound
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- In relation to their site of initiation on the tooth surface:
  - Of the 85 carious surfaces 3.7% were carious
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Cavitations were recorded in 26.8% (27) of individuals and 8.8% (10/113) of tooth positions. 56% of all lesions were located on the anterior jaw.

Most bony cavities (80%) were probably periapically granulomas or apical periodontal cysts. None of these lesions were differentially diagnosed as abscesses.

In 7 cases it was possible to ascertain the subjacent cause of the periapical lesions: in 6 (80%), the lesion had probably been due to pulp exposure resulting from caries. In only one case did the lesion appear related to pulp exposure resulting from severe dental caries.

Maxillary lesions

Atrophy of the alveolar process on the premaxilla was observed in two individuals (28.6%). One was characterized by a slight recession of the alveolar process whereas the other by its total degeneration. None of these individuals had lost their anterior upper teeth.

Discussion

The present study consists on the first attempt to characterize oral health of leprosy sufferers in Late Medieval/Early modern times in Portugal.

Despite the relatively small sample size, some results are particularly interesting, especially regarding the percentage of individuals (71.4%) and teeth (86.4%) affected by carious lesions. When only cavitated lesions are considered, these values drop to 57.1% and 32.2%, respectively. Even so, these are very high values in comparison to other medieval and post-medieval Portuguese series. For example, Cunha (1994) found that 9.8% of the teeth had cavitated lesions at Medieval S. João da Almohada, whereas at Fão this value only reached 4.8%.

Anterior dentition is more affected by carious lesions than posterior teeth, a rather uncommon situation that deserves further research in order to establish or reject a possible relation with leprosy.

Periapical inflammation is not a major oral health issue. From the seven analyzed individuals only two presented small lesions. None of these was diagnosed as abscesses, being more probably periapically granulomas or apical periodontal cysts, which are usually benign and asymptomatic. Besides, 40% of the lesions had been probably due to pulp exposure resulting from caries.

Regarding maxillary lesions only two individuals had an atrophy of the alveolar process. However, these lesions did not cause the loss of their upper anterior teeth. Accordingly, in the Odense osteological series (Denmark), Matos (2009) found that many individuals affected by this bone loss kept their teeth.

Final remarks

Regarding oral pathology, the high frequency of caries, particularly on the anterior region, is in line with the most striking feature of the analysed sample, a result that suggests that leprosy may have had a negative impact on oral health. Such relation was already noted by other researchers. Nunez-Marti et al. (2004) found that current leprosy patients show a tendency to poor dental health, especially regarding carious lesions.

Further research is needed in order to ascertain the relation between leprosy and dental caries by means of the study of other anthropological collections, from both leprosaria and regular cemeteries. Contributions from other fields, namely medicine and dental medicine, may also contribute to elucidate this question.

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References


