INTRODUCTION

The lesions identified in a skeleton of an adult male (COR XVII), recovered from the medieval necropolis of Barrejo, León (Spain), are presented and discussed.

The possible diagnosis of leprosy opens a debate on its diagnosis in medieval populations in the Iberian Peninsula (Spain and Portugal).

MATERIAL AND METHODS

Necropolis: A total of 25 individuals have been recovered: 17 males and 7 females (20-50 years-old) and 2 non-adults (2-8 years-old).

Chronology: 12th-13th centuries.

Localization: Barrejo medieval necropolis is located in the valley of Valdavido, National Park of Picos de Europa, province of León (north-western Spain) (Figure 1). It is delimited by the Cántabrian Mountains. The weather is rainy Atlantic, with a harsh winter and short mild summers.


Age-at-death estimation: Morphological changes in the auricular surface of the ilium (Lovejoy et al., 1985).

Stature estimation: Regression equations based on femur length (Heinrich, 2000).

Paleopathological analysis: The skeleton was macroscopically examined by the three authors at the same time and the bones radiographed.

RESULTS

Conservation: The skeleton COR XVII is relatively well-preserved although its structure was affected by chemical diagnosis due to the necropolis proximity to the River Carasa. Only the left side of the mandible is present. The proximal epiphyses of both tibiae were not preserved.

Missing bones: vertebrae (2), tarsals (2), carpals (3), metacarpals (2), and hand (2) and foot (21) phalanges.

Sex and age-at-death: Adult male >30 years-old.

Stature: 154.5 ± 6.90 cm.

Pathology: Several lesions were identified in the skull (Figures 2-5), tibia and fibula (Figure 6).

Cribra orbitalis was observed in both orbits.

Poncic hyperostosis was present in the supraorbital area.

Dental enamel hypoplasies were recorded in the upper anterior teeth.

Upper central incisors were lost post-mortem.

No lesions were found in either hand or foot bones.

DISCUSSION

Differential diagnosis

Differential diagnosis of the rhinomaxillary lesions must take into consideration several pathological conditions, namely fungal and oral infections, maxillary sinuses, leishmaniosis, neoplastic disease, treponematosis and leprosy (Ortner, 2003).

In fungal infections the formation of new bone is uncommon, causing only unilateral perforations of the bone (Robbins et al., 2003), which is not the case for this individual.

Oral infections and rhinomaxillary sinuses can cause inflammation and destruction of the alveolar region of the maxilla (Robbins et al., 2009), which was not observed in the present case.

Muco-cutaneous leishmaniosis can also cause destructive alterations on the bones of the rhinomaxillary region, but the atrophy of the nasal spine and pithrum aperture is not present (Ortner, 2003; Robbins et al., 2009).

In neoplastic diseases, osseous lesions may manifest in the skull or the facial bones (Ortner, 2003). However, their morphological appearance is distinct from those presented here.

Although in treponematosis, such as acquired syphilis, nasal lesions can be present, the rhinomaxillary alterations here observed together with the absence of pathognomonic lesions of this condition, such as canes sicca, turn this diagnosis unlikely (Heaster, 1976; Ortner, 2003).

The association of rhinomaxillary remodeling, appendicular involvement, abnormal bone formation and destruction presented by the male COR XVII, point to leprosy (Rubi et al., 2012).

Leprosy is a chronic and slowly progressive disease that, in later stages, leads inevitably to neurotrophic alterations of the hands and feet (Minter and Bollard, 2017). It should also be highlighted that some hand and feet bones are missing, precluding their analysis.

Cribra orbitalis and enamel hypoplasia observed emphasize the fact that this individual underwent a period of physiological stress caused by disease and/or malnutrition.

Archaeological background

In the 15th century, leprosy was widespread in the north of Spain, there being 24 leper hospitals established on the main pilgrim routes of the Asturias province (Tolvan, 1996). At that time, valley of Valdavido was also provided by a small commercial exchange that could bring informed people to the village (Rodriguez, 1999).

Like other individuals buried in this necropolis (Figure 2), individual COR XVII was in supine position with upper limbs by the sides of the torso on a west-east axis, in stone lined graves and lacking grave goods, suggesting that people with leprosy were not necessarily stigmatized in death. In fact, this was not uncommon in isolated populations where coexistence with patients was normal and routine (Tolvan, 1996; Elsabed et al., 1997; Rubi et al., 2017).

CONCLUSION

According to historical documentary sources, leprosy was a relatively common disease in the medieval Iberian Peninsula documented by the presence of leprosy hospitals (De las Aguas, 2005). However, as with many seemingly frequent diseases, the number of cases diagnosed in paleopathology is sorely lacking (Rubi et al., 2014). The present case is the first to be described for Middle Ages in north western Spain, enriching the osteoarchaeological record of leprosy and contributing to reducing the discrepancies between the historical and paleopathological evidence of this disease.

REFERENCES


Figure 1. Localization and landscape of the medieval necropolis of Barrejo. Province of León in red. The star shows the localization of the necropolis.

Figure 2. Skull of COR XVII.

Figure 3. Resorption of the anterior nasal spine and osteolysis of the pithrum aperture are noticeable (a). Lytic lesions are also identified in the nasal, which is indicative of an inflammatory condition, culminating in the total resorption of the vomer and nasal conchae, with the ethmoids also showing signs of intranasal destructive alterations (b). These lesions are accompanied by pitting and proliferation of woven bone in the lateral margins of the nasal cavity.

Figure 4. Hard palate presents evidence of pitting and abnormal proliferative bone (a). Perforation in palatine transverse suture and the floor of the nasal cavity are noted probably related to inflammatory processes (b).

Figure 5. Remodeling and thinning of the anterior surface of the right maxilla, which led to post-mortem fracture.

Figure 6. Cortical pericic reaction, bilateral and symmetrical, recorded at the diaphyses of both tibiae (a, c) and fibulae (b). A post-mortem fracture of the right fibulae allows for the observation of subperiosteal bone reaction (d).

Figure 7. The radiographic analysis of the tibia and fibulae shows the reduction of the medullary cavities, particularly in tibia, and maintenance of cortical thickness. No tumours were found. No radiolucent lines, suggestive of previous lesions, were identified.