



Contents lists available at ScienceDirect

Quaternary International

journal homepage: www.elsevier.com/locate/quaint

Forum communication

A pathological Late Pleistocene badger from San Sidero (Apulia, Southern Italy): Implications for developmental pathology and feeding behaviour

Dawid A. Iurino^{a,*}, Rosario Fico^b, Raffaele Sardella^a^a Dipartimento di Scienze della Terra, Sapienza Università di Roma, Piazzale Aldo Moro 5, 00185, Rome, Italy^b Centro di Referenza Nazionale per la Medicina Forense Veterinaria Istituto Zooprofilattico Sperimentale del Lazio e della Toscana, Sezione di Grosseto, Viale Europa, 30, 58100, Grosseto, Italy

ARTICLE INFO

Article history:

Available online 6 January 2015

Keywords:

Paleopathology
 Chronic suppurative osteomyelitis
 Mustelidae
 Meles meles
 Late Pleistocene

ABSTRACT

Among fossil vertebrates, oral pathologies are of particular interest, because of their considerable effect on teeth and maxillary/dentary bones and, as a consequence, on mastication and feeding behaviour. This study focused on a pathological left hemimandible referred to the mustelid *Meles meles* unearthed from a Late Pleistocene karst filling deposit at San Sidero (Apulia, South Italy). This fossil shows unusual marked abnormalities related to a rare case of nonodontogenic chronic suppurative osteomyelitis. Clinical diagnosis of the disease and the timing of its development have been defined on the basis of a veterinary approach and X-ray analyses. Such a pathological condition can be explained as a consequence of a wound due to a porcupine quill. The analysis of the injury also provides information about the biomechanics of the bite and on the feeding behaviour. The study case confirms how palaeopathological analyses can be considered valuable tools to reconstruct the physiology of animals that lived in the past and to depict in detail the interactions among Late Pleistocene mammals, thus allowing a more accurate reconstruction of the ecology in fossil mammals.

© 2014 Elsevier Ltd and INQUA. All rights reserved.

1. Introduction

The study of palaeopathological traces on fossil bones is a valuable tool in reconstructing care conditions in extinct animals. Some pathologies and abnormalities may reveal interesting aspects of physiological and anatomical features in fossil animals and, in some cases, also important information about the behaviour and the past interaction between animals (Siegel, 1976; Palmqvist et al., 1999; Iurino et al., 2013; Iurino and Sardella, 2014; Iurino, 2014). In 2006, during a field survey in the quarries of San Sidero (Lecce, Apulia), a research team of the Earth Sciences Department of Sapienza University of Rome collected large mammal remains from the Late Pleistocene karst filling deposits exposed in that area. Among them three carnivores showed clear evidence of pathologies or injuries. Iurino et al. (2013) described a case of chronic periodontitis on a partial skull and mandible referable to the

hypercarnivore canid *Cuon alpinus*, while a process of alveolar reossification after canine loss in *Crocuta crocuta* has been described by Iurino and Sardella (2014). The third carnivore is the focus of the present paper. The fossil is a hemimandible of *Meles meles* (SS 2006/1) with marked abnormalities related to a rare case of nonodontogenic chronic suppurative osteomyelitis. Such a pathological condition may be explained as a consequence of a wound due to a porcupine quill. The morphological abnormalities of the left hemimandible have been investigated using tomographic techniques and veterinary diagnostics to reconstruct the development process of the pathology and its inferences on badger feeding behaviour and care condition.

2. Geological setting

The Late Pleistocene San Sidero site (Lecce, Apulia, South Italy, 40°08'20" N, 18°16'23"E) (Fig. 1) is located in a region where several quarries are opened for the extraction of a Miocene calcarenite, known as "Pietra Leccese." During the Middle–Late Pleistocene, the calcarenite was affected by intense karst activity

* Corresponding author.

E-mail address: dawid.iurino@uniroma1.it (D.A. Iurino).

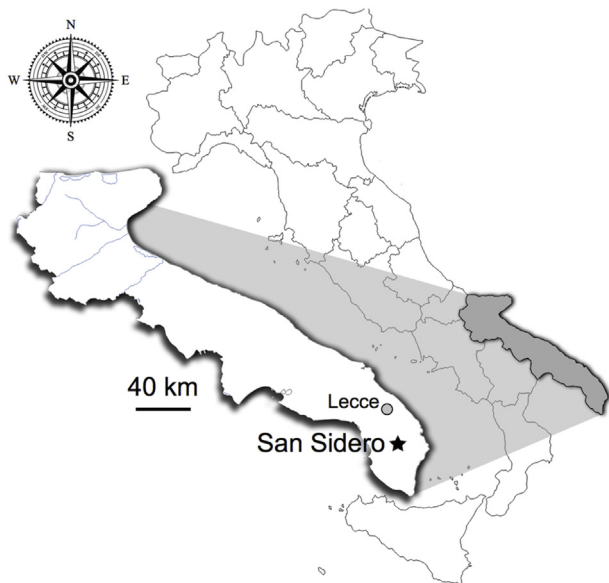


Fig. 1. Location of the Late Pleistocene site of San Sidero (Lecce, Apulia, South Italy).

that formed an articulated fissure network that the quarry activities have since exposed (Selleri et al., 2003; Selleri, 2007). The vertically funnel-shaped karst fissures, locally named “ventarole,” were filled with “terre rosse,” residual reddish clays rich with iron oxides, including, in some cases, vertebrate fossil bones. The fossil remains, carried by surface water run-off in the fissures, are generally well preserved, and articulated bones can be found. The faunal assemblage recorded into the “terre rosse” deposit includes *Equus ferus*, *Equus hydruntinus*, *Stephanorhinus hemitoechus*, *Dama dama*, *Cervus elaphus*, *Capreolus capreolus*, *Bos primigenius*, *Bison priscus*, *Sus scrofa*, *Canis lupus*, *Canis mosbachensis*, *Cuon alpinus*, *Vulpes vulpes*, *Panthera pardus*, *Felis silvestris*, *Lynx lynx*, *Crocota crocuta*, *Meles meles*, *Lepus europaeus*, *Oryctolagus cuniculus*, *Erinaceus* cf. *E. europaeus*, *Microtus (Terricola) savii*, and *Apodemus sylvaticus*, *Eliomys quercinus* and has been biochronologically referred to the beginning of the Late Pleistocene (De Giuli, 1983; Bologna et al., 1994; Bedetti et al., 2004).

3. Materials and methods

3.1. Radiography and CT

Radiographs were taken at the Veterinary Clinic “La Clinica Veterinaria Borghesiana” (Roma), using digital Radiological Unit Rx Foschi x1 425 HF. It consists of an X-ray tube of KW 16–32, with rotating anode of 2800 rpm (HZ 50) and 60 mm in diameter. The maximum anode voltage is 130 kV. Radiographs have been made in projection L-L (latero-lateralis) 42 kV; mAs 20, projection M-L (medio-lateralis) 42 kV; mAs 20, with dimensions of 3072 × 3072 pixels. Tomographic images were made at M. G. Vannini Hospital by Philips Brilliance CT 64-channel scanner. The fossil of *M. meles* was scanned in its entirety in the coronal (i.e. transverse of some authors) slice plane from front to back. The scanning resulted in 137 slices (i.e. images) with dimensions of 768 × 596 pixels. The slices are 0.9 mm thick with an interslice space (the space between consecutive slices) of 0.45 mm. Segmentation and 3D rendering of the hemimaxilla were computed using the Open-Source software OsiriX 5.6, 32-bit for Mac.

3.2. Referred material

SS 2006/1: left hemimandible with M₁ and M₂

“SS” refers to San Sidero. The specimen is stored at the Earth Science Department of Sapienza University of Rome.

3.2.1. Description

The fossil remain of *Meles meles* from San Sidero (SS 2006/1) is represented by a left hemimandible in a good state of preservation (Fig. 2). The hemimandible lacks the incisors' portion, and the following teeth C-P₄ are missing, although the alveoli of the P₃ and the P₄ are present. Inside the alveolar cavity of the P₄ are visible root fragments. The M₁ and the M₂ are well preserved with a strong wear cusps and a high number of enamel infractions. The heavily worn teeth are compatible with those of an adult specimen. Under the P₃ alveoli, there are two mandibular foramina. The morphology of the fossil is peculiar because of the strong deformation of pathological origin, which has affected both the horizontal and vertical branch of the hemimandible. In labial and occlusal view, a strong swelling is evident, developed along the whole horizontal branch, starting from the P₃ alveoli to the angular process.

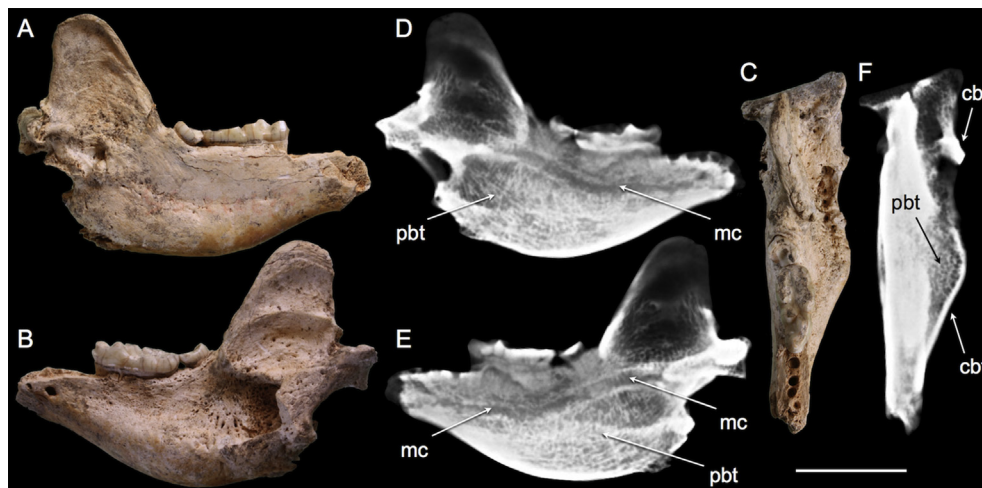


Fig. 2. *Meles meles* (SS 2006/1) from San Sidero (Lecce, Apulia, South Italy), Late Pleistocene: (A) photo lingual view, (B) photo buccal view, (C) photo occlusal view, (D) radiography lingual view, (E) radiography buccal view, (F) radiography occlusal view. pbt, porous bone tissue; mc, mandibular canal; cbt, compact bone tissue. Scale bar: 20 mm.

Download English Version:

<https://daneshyari.com/en/article/1040827>

Download Persian Version:

<https://daneshyari.com/article/1040827>

[Daneshyari.com](https://daneshyari.com)