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Research paper

Archeozoological study of the macromammal remains stratigraphically associated with the Magdalenian human burial in El Mirón Cave (Cantabria, Spain)

Ana B. Marín-Arroyo*, Jeanne Marie Geiling

Instituto Internacional de Investigaciones Prehistóricas de Cantabria, Universidad de Cantabria, Avda. de los Castros, s/n, 39005 Santander, Spain

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ABSTRACT

The presence of abundant macromammal remains in the level in which the first Magdalenian human burial ever found in the Iberian Peninsula affords an outstanding opportunity to reconstruct aspects of the subsistence strategy of the hunter–gatherer group to which the deceased woman may have belonged. The analyses reported here, in addition to rejecting the hypothesis of deliberate faunal grave goods or funerary offerings, give us a better understanding of how Lower Magdalenian societies exploited available food resources, providing a first glimpse of how the El Mirón site fitted within the overall paleoeconomic framework of the Oldest Dryas phase of the Late Glacial in Cantabrian Spain. Furthermore, the particular location of the site at the ecotone between the Cantabrian Mountains and the valley of the Asón River, not far from the coastal lowlands, provides evidence of a highly efficient, productive system for exploiting the available ungulate game of the region.

1. Introduction

Coming after the Last Glacial Maximum, the Magdalenian period in the Franco-Cantabrian region was one of the periods of maximum cultural elaboration within the European Upper Paleolithic. Its rich archeological record provides detailed evidence about the lifeways of hunter–gatherer groups in terms of technology, subsistence, territorial organization, and artistic activity (Straus and González Morales, 2012). In contrast, our knowledge of treatment of the dead during this period is relatively limited, since discoveries of human burials are few (and, until recently, essentially non-existent in Iberia). At this time, only 26 single and double primary burials (representing 31 individuals) have been uncovered in all of the Late Upper Paleolithic of Europe and the Near East. Most of the specifically Magdalenian burials are from France (Orschiedt, 2013; Pettitt, 2011; Riel-Salvatore and Gravel-Miguel, 2013).

Grave goods clearly associated with primary Upper Paleolithic burials are not the norm, although such offerings have been clearly identified by archeologists in some cases. The objects generally found together with human remains are lithic and osseous artifacts, faunal remains and ochre (see Riel-Salvatore and Gravel Miguel, 2013 for a recent synthesis). Non-weapon artifacts have been found with 22% of Late Upper Paleolithic (LUP) burials, weapons with 32% and ochre with 50%. It is often difficult to tell if the bones of large mammals—present in 34% of the LUP burials—had been placed there deliberately or were simply the remains of animals that had been eaten and were discarded, becoming part of the garbage mixed with sediments in which the human consumers of the animals had later dug the graves within habitation sites. The scarcity of taphonomic studies of animal bones physically related with human remains makes any conclusions on this question highly problematic (Henry-Gambier et al., 2013; Henry-Gambier and Faucheux, 2012; Orschiedt, 1999, 2002). Many LUP burials also contain mollusk shells (sometimes perforated). The macromammal remains can include either selected skeletal elements from animals present in the normal diet of the Upper Paleolithic people, such as atrophied red deer canines, or items from animals with highly symbolic (but not dietary) importance including such carnivores as foxes or Paleolithic dogs (Maška, 2008: 185; Davis and Valla, 1978; Maher et al., 2011) or in still other cases, simply remains of animals that had been consumed in the same sites which served both as habitation places and burial grounds for deceased group members.

In this context, the discovery of the Lower Magdalenian burial in El Mirón Cave is quite unique. In a relatively interior part of the cave

* Corresponding author.
E-mail address: marinab@unican.es (A.B. Marín-Arroyo).

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vestibule and taking advantage of a natural hollow between a shelf of the bedrock cave wall and a large block, Magdalenian people dug a small hole in which to bury the body of an adult woman around 18,700 years ago (Straus and González Morales, 2015). More than half of the skeleton was recovered (mainly vertebrae, ribs, pelvis and scapula fragments, hands and feet, plus the mandible, right tibia, and both fibulae and patellae), although the cranium and most of the large limb bones are missing (both radio/ulnas, humerus, femurs and the left tibia). The exhaustive taphonomic study of the remains suggests that this had been a primary interment. The most likely hypothesis is that, once the corpse was decomposed, a group of humans (contemporaries of the dead woman or not) came upon bones that had been exposed by the action of a carnivore that had gnawed one of the tibiae. They may have removed the skull and the other long bones, perhaps to make a secondary burial (or display) thereof at some other (today unknown) place, possibly secondary deposits of human bones being fairly well-known in the Magdalenian record, including at El Castillo Cave in central Cantabria (Cabrera, 1984: 61, 298, 356). After removing those elements, the people covered over the rest of the bones again with dirt from the surrounding occupation levels deliberately impregnated with ochre powder rich in hematite crystals. Finally three blocks, a stone slab and smaller rocks were placed atop the re-burial (Marín-Arroyo, 2015; Geiling and Marín-Arroyo, 2015).

In this work we analyze the remains of macromammals found in the physically delimited, ca. 3 m^2 area of the burial Level 504 with the principal aims of, first, testing the hypothesis of faunal grave offerings and, second, characterization of the subsistence base of hunter–gatherers of the period during which the woman had lived. This evidence will be compared with existing models of Lower Magdalenian subsistence in the Cantabrian region.

2. Materials and methods

2.1. El Mirón Cave

El Mirón Cave is located in the eastern sector of Cantabria Province (northern Atlantic Spain), midway between the cities of Santander and Bilbao and 20 km form the present coast. The site is in the Upper Asón River Valley at 260 m above sea level in a montane environment surrounded by peaks at and above 1000 m a.s.l., but not far from fluvial and coastal plains. It is a large limestone cave with an ample vestibule, 30 m deep, by 8–16 m wide, by 13 m high, which ends at an erosional slope of ancient alluvial fill that leads back to the inner cave that is accessible for another 100 m (Straus and Gonzalez Morales, 2012). The 20 m-high mouth faces due west and dominates the confluence of the Asón with two tributary steams. Since 1996, L.G. Straus and M.R. González Morales have been carrying out excavations in three areas of the vestibule: the front sector (the Cabin), the rear (the Corral) and a connecting trench (Fig. 1).

Limited testing of the area behind a large, engraved block at the southeast rear corner of the vestibule in 2001 led to the discovery of a few isolated human bones. However, it was in 2010, when L. Straus suggested to recommence excavations in this promising, but narrow and difficult area, that the first major discoveries were made—a human mandible and tibia. The human burial was excavated in 2010, 2011 and 2013. It is the first substantial human burial of Magdalenian age to be found on the Iberian Peninsula (Straus et al., 2011; Straus and González Morales, 2015; Straus et al., 2015, Marín-Arroyo, 2015). The excavations recovered human bones mixed together with numerous faunal remains, together with lithic debris and tools, and some osseous artifacts and mollusk shells—all very similar to the kinds of materials found in Lower Magdalenian habitation deposits throughout El Mirón, including culturally rich levels in the vestibule front, center and rear sectors that are roughly contemporaneous with Level 504 in burial area at the southeastern ("behind-the-block") corner of the vestibule, all dating to about 18.5–19 cal. kya.

2.2. Material

The material studied here includes macromammal remains from Level 504, the red ochre-stained layer in which was found the majority of the human remains—those of an adult woman directly dated to 15,460 ± 40 uncal. BP (approximately 18,700 years ago) (MAMS-14585). Most of the identifiable faunal remains (epiphyses, teeth, antlers, etc.) and diaphyses of over 5 cm in length were recovered and piece-plotted individually. Other bones were often recovered in general bags by quarter–meter subsquares and spits of 1–5 cm in thickness, while others were recovered during water-screening of the sediments with the same level of three-dimensional spatial control (see methods described in Marín-Arroyo, 2010).

An AMS radiocarbon date of 15,740 ± 40 uncal. BP (UGA-7217) obtained on an animal bone from Level 504 in the central square of the burial area (X7) may indicate that at least some of the faunal remains in this level were older than the human skeleton (dated on a fibula from the same square (see Straus and Gonzalez Morales, 2015). The Lower Magdalenian period (ca. 19–17.5 cal. kya) is very well represented in El Mirón by massive habitation layers in the vestibule front (notably Level 17, a palimpsest horizon with five radiocarbon dates tightly clustered around 15.5 uncal. BP (18.8 cal. kya) (Straus et al., 2011), in the connecting trench (Level 312—15.85 uncal. kya) and in the vestibule rear (Levels 110-109).

One of the most visible characteristics of the faunal assemblage recovered from burial area Level 504 is the red ochre staining (with sparkling hematite crystals) not only of the sediments, but also of animal and human bones. This particularity defined the burial area and thus all kinds of objects associated with it (Straus et al., 2015; Seva Román et al., 2015). Nevertheless, not all the animal and human bones appeared stained. Only after the human anthropological and archeozoological analyses, could each bone be specifically assigned. Stratigraphically, Level 504 was in the process of formation when the primary burial was made, while Level 505 was already in existence (Straus and Gonzalez Morales, 2015; Geiling and Marín-Arroyo, 2015). The massive presence of charcoal and ashes in Level 505 (a hearth layer) led to the staining of some animal and human bones from Level 504 with those fire products, as a result of the digging of the grave pit from Level 504 into 505. The taphonomy and spatial distribution of the human remains are discussed in other articles of this special issue of *Journal of Archeological Science* (Marin-Arroyo; Geiling and Marin-Arroyo); these should be read in conjunction with the present article.

2.3. Methods

The objective of the study of the macromammals from the Lower Magdalenian burial area in El Mirón was centered principally on three aspects: 1.) determination of species and skeletal elements represented; 2.) evaluation of taphonomic alterations of the animal bones to be able to identify similarities and differences vis à vis those of the human bones; and 3.) interpretation as to the reasons for the presence of macromammal bones in the burial area.

In order to do this, the macromammal remains were identified anatomically and taxonomically using the reference collection of vertebrates in the Bioarcheology Laboratory of the Instituto Internacional de Investigaciones Prehistóricas at the Universidad de Cantabria, Santander Spain. The identified bones were then quantified by using the following indices: Number of Identified