

The Sima I of the Polvorín (Karrantza, Biscay): a new site with Neandertal lineage fossil remains in the Eastern Cantabrian Region (Northern Iberian Peninsula)

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The Iberian Peninsula is a key region to understand the evolution of Neandertals. It has yielded the largest European Middle Pleistocene fossil human assemblage (Sima de los Huesos-SH) [1] as well other known sites with Upper Pleistocene Neandertal remains, including purposeful burials, cannibalized remains and fossils with carnivore tooth-marks. With the exception of SH, well-preserved postcranial fossil remains are still scarce in Iberia. In this context, we present new fossil remains, comprising both cranial and postcranial remains, belonging to a single adult individual, with Neandertal morphological features, identified in the collections housed at the Arkeologi Museoa (Bilbao, Biscay).

The recent review of the paleontological collection recovered at the Sima I (cave pit) of the Polvorín cave (Karrantza, Biscay, Northern Iberian Peninsula) has allowed the identification of several human remains that show morphological features present in the Middle and Late Pleistocene Neandertal lineage. The Polvorín cave (180 m.a.s.l., Karrantza, Biscay) is located in the SW slope of the Peña de Ranero, 82 m above Karrantza river. The entrance of the cave is one of the classical archaeological sites from the Basque Country and was firstly excavated in 1931. This and more recent excavations have revealed a stratigraphic sequence with Middle and Upper Paleolithic occupations as well as a more recent (Holocene) prehistoric use of the cave [2]. The Sima I is located in a lower conduit of the cave system which is difficult to access. From the cave entrance, after c. 50 m, a lateral conduit has to be taken and then, using special caving equipment, descent a 7 m shaft and a 25 m sub-vertical ramp.

The human fossil remains identified at the museum comprise three virtually complete thoracic vertebrae, a partial thoracic vertebra, a partial right radius, an intermediate hand phalanx, and a partial hallux metatarsal. The curvature of the shaft of the radius, the orientation of the transverse processes of the thoracic vertebrae, the relative width of the hand phalanx, and the shape of the metatarsal shaft are consistent with the morphology present in Neandertals, but also present in their Middle Pleistocene ancestors [3]. These human remains were found in a purely paleontological assemblage, mainly composed by cave bears and hyenas. These fossil remains were recovered in 1983 (n=255) [4] and 2000 (n=84) by speleologists from the surface of the cave in a disturbed context. The new excavations in 2021 have allowed to find three additional human fossil remains: a parietal fragment, a shaft fragment from a left radius, and a lateral cuneiform. Most of the bear remains from Polvorín-Sima I housed at the Arkeologi Museoa can be classified as *Ursus spelaeus* but a few remains show a morphology consistent with *U. deningeri*, which suggests a diachronic accumulation. *U. deningeri* is a taxon also present in the nearby (1.65 km as the crow flies) cave of Santa Isabel de Ranero, which has yielded one of the largest accumulations of this species in Iberia [5]. Additionally, the taphonomic analysis has revealed that the human remains do not show any sign of anthropic or carnivore mark and that the faunal remains show very low evidence (c. 7.5% of the remains) of carnivore activity. The preliminary geological study of the site shows different phases of infilling and erosion, with perched sediment remnants (with fossil remains) at different heights of the gallery. In fact, a minimum of three different fossil accumulation phases have been provisionally determined which would be consistent with the presence of two bear chrono-species in the recovered fossil assemblage.

In summary, the Sima I of El Polvorín has provided evidence of faunal remains from the Middle and the Late Pleistocene, and has also yielded 10 human remains belonging to single adult individual with morphological features present in the Neandertal lineage.

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