Continuity versus discontinuity of the Early Pleistocene European human populations: The Atapuerca evidence

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During the last decades, we have witnessed a significant increase in the number of evidences in favour of the human settlement of Europe during the Early Pleistocene. However, there are still many issues open about the character of this occupation such as whether Europe was continuously populated or not since the first hominins arrived to the continent. Increasing climatic oscillations and seasonality as well as some palaeogeographic factors may have conditioned the pattern of colonization of Europe.

The Gran Dolina (TD) and Sima del Elefante (TE) cave sites in the Sierra de Atapuerca, (Spain) include large and quasi-continuous stratigraphic sequences that stretch back from at least 1.2 million years ago (Ma) to the Matuyama/Brunhes boundary. The archaeological and paleontological record from these sites can help to test different hypotheses about the character of the human settlement in this region and period. A fragmentary human mandible, dated to about 1.2 million years ago, was recovered from the TE9 level form the TE cave site. Furthermore, the TD6 level has yielded a large collection of human fossil remains attributed to Homo antecessor. According to different geochronological methods, as well as to paleomagnetic and biostratigraphical analyses, these hominins belong to an age range of 0.96 to 0.80 Ma. Unfortunately, the comparison of these two hypodigms is not enough to conclude whether the Gran Dolina-TD6 hominins and the Sima del Elefante human remains represent the same species, although large departures from the African morphologies can be ascertained in both samples. A set of derived features of H. antecessor shared with both the Neanderthal lineage and modern humans suggests that this species is related, and not far, from the most recent common ancestor (MRCA) of H. neanderthalensis and H. sapiens. Having into account these observations, if we assume that there was a lineal biological relationship between the TE9 and TD6 hominins, we should reconsider many of the conclusions achieved in previous paleontological and genetic studies. In addition, we would be obliged to build a highly complicated paleogeographical scenario for the origin of the MRCA. Although continuity in the settlement of Europe during the entire late Early Pleistocene is not discarded (e.g. in refuge areas), it seems that this Western extreme of Eurasia, and the Iberian Peninsula in particular, was occupied by at least two different hominin populations.