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Identification of uncommon dental malformation in an individual of the 3rd millennium BC

A new study from the UAB has identified the most ancient case of isolated bilateral macrodontia of mandibular second premolars reported to date. It is a relatively uncommon dental malformation that has been found in an individual from “Cova del Pantà de Foix” (Castellet i la Gornal, Barcelona), whose burials date to the 3rd millennium BC. Although the cause of this malformation is unknown, the results relate it to the existence of environmental stress factors that might have affected the population.

The presence of dental malformations in a human population provides information about endogamy or environmental factors affecting such populations. Concretely, the isolated macrodontia of second lower premolars is extremely rare, with only 16 cases described in the current population. It consists of an increase of size in the teeth of unknown aetiology, giving them a molar-like shape.

A paper recently published in the journal Anthropologischer Anzeiger describes the most ancient case of this condition, shown in a young adult male from “Cova del Pantà de Foix” (Castellet i la Gornal, Barcelona), a sepulchral cave dated between 3420 and 2640 cal BC.

Diego López Onaindia and Mª Eulàlia Subirà, researchers of the GRAPAC team in the Biological Anthropology Unit of the UAB and Amaia Otxoa de Amezaga, a researcher of the Neurosciences Institute (Biochemistry Department) have participated in this study.

The first thing that stands out in this case is that, in contrast to current cases in which the large size of the teeth affects their eruption and the contiguous ones, in this one it seems that there were no such space problems.

In order to discard different conditions and make the diagnosis, radiological analysis was carried out. Moreover, a revision of dental development was conducted, in which apoptosis (a process of programmed cell death)playsa major role. Therefore, taking into account that the lower second premolars are the last teeth in which the number of cusps and size are determined, it is understandable that no other teeth are affected. Furthermore, different indicators, such as the high prevalence of enamel hypoplasias (underdevelopment or incomplete development of a tissue or organ) in the population, suggest the presence of an environmental stress factor.

In summary, this case is important because it is the first in a prehistoric context showing this morphology. Moreover, even if the concrete cause leading to macrodontia is not clear, the case is related to the presence of an environmental stress factor affecting the population.

Diego López-Onaindia
Eulàlia Subirà i de Galdàcano
Grup de Recerca Aplicada al Patrimoni Cultural (GRAPAC)
Department of Animal Biology, Plant Biology and Ecology
diego20lopez@gmail.com, eulalia.subira@uab.cat

References

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