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## Did Cro-Magnon 1 have neurofibromatosis type 1?

The Cro-Magnon 1 skeleton corresponds to a 28 000 BCE *Homo sapiens* male individual that was discovered in 1868 in a rock shelter in Les Eyzies, France.<sup>1</sup> Since its discovery, various diagnoses have been proposed with regards to a round polycyclic osteolytic lesion on the right frontal bone, measuring 37 mm x 27 mm (appendix): post-mortem alteration due to the soil,<sup>2</sup> rickets,<sup>3</sup> actinomycosis,<sup>4</sup> and Langerhans cell histiocytosis.<sup>5</sup>

Recently, we did a medical CT scan, followed by a micro CT scan, on the lesion. The results showed the exact bone aspect of the pathological zone and peripheral limits (figure A): a limited resorption of the external cortical bone, of granular aspect, without peripheral sclerosis in the internal table, which excludes a malignant transformation. This aspect agrees with the radiological morphology of a subcutaneous schwannoma with progressive bone erosion in the context of neurofibromatosis type 1, as confirmed by biomedical literature<sup>6,7</sup> and direct comparison with palaeopathological reference collections (for example, skull 101 of the Tessier collection, in Amiens, France).

Additionally, an asymmetry of the size of the internal auditory meatus is visible after a micro CT scan examination and three-dimensional reconstruction of the Cro-Magnon 1 skull (appendix), which could be related to the development of an acoustic neurinoma (a schwannoma).<sup>8</sup> Examination of other nerve foramina at the level of the skull base did not

show any anomaly. Although acoustic neurinomas are more frequent in neurofibromatosis type 2, they have also been reported in type 1.<sup>9</sup> Cases of internal auditory meatus enlargement in neurofibromatosis type 1 have also been described without any associated acoustic nerve tumour, with the cause of the enlargement being related to bone dystrophy (bony dysplasia) or dural ectasia.<sup>10</sup>

According to this retrospective diagnosis, a new facial reconstruction of this individual can be proposed, featuring the macroscopic aspect of the disease (figure B). A further analysis of the rest of the skeleton might be of interest to search for other bone lesions with characteristics of low growth rate.

We declare no competing interests.

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See Online for appendix

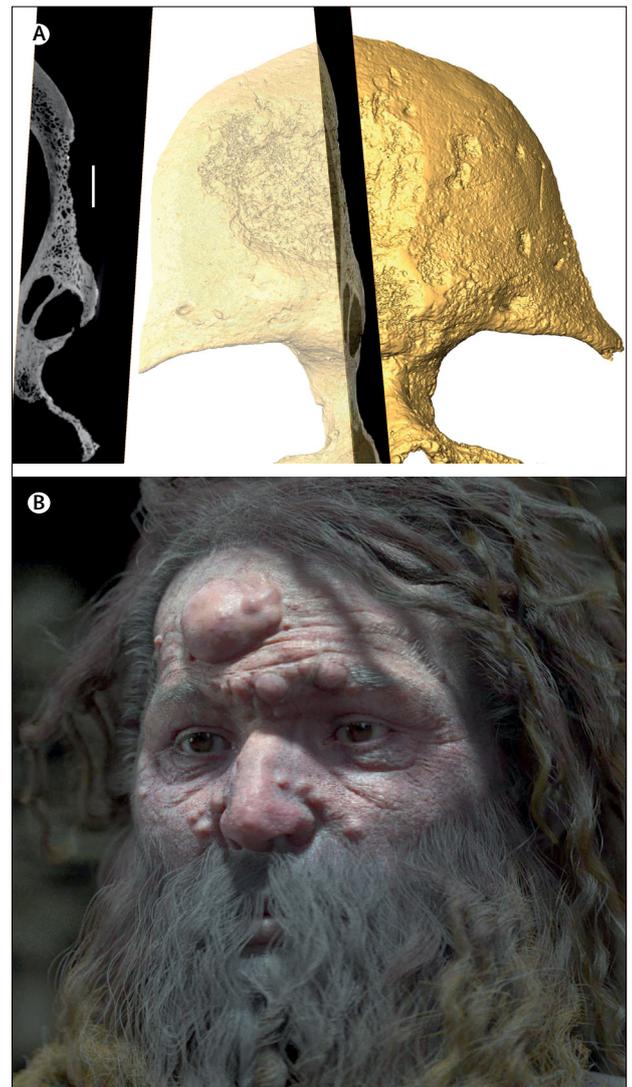


Figure: Features of the lesion in the Cro-Magnon 1 skull

(A) Detail of the bone erosion at the micro CT examination; bar is 0.5 cm. (B) Full facial reconstruction with clear visibility of the benign tumour on the frontal zone.