

## CASE REPORT

**A case of acromegaly (Greece, 7th century AD)**Philippe Charlier<sup>1,2</sup> and Christina Tsigonaki<sup>3</sup><sup>1</sup>Department of Forensic Medicine and Pathology, University Hospital R. Poincaré (AP-HP, UVSQ), 104 R. Poincaré Boulevard, F-92380 Garches, France.<sup>2</sup>Department of Medical Ethics, Faculty of Medicine Paris 5, 45 Saints Pères Street, 75006 Paris, France and <sup>3</sup>Department of History and Archaeology, School of Philosophy, University of Crete, 74100 Rethymnon, Crete, Greece

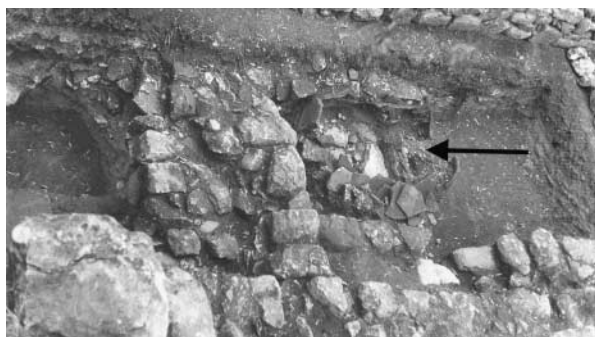
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**Abstract***Objective:* To diagnose hormone-secreting pituitary adenoma in dry bones.*Design:* We present here the case of a pathological skull from the Byzantine site of Eleutherna (Greece).*Methods:* A complete anthropological and medical examination of the skull and the whole conserved skeleton was performed in the laboratory.*Results:* All anatomical signs of acromegaly were present on this skull. More importantly, enlargement of the sella turcica clearly indicated the development of a macroadenoma, at the origin of the disease.*Conclusions:* This skeletal case, and other ancient ones are discussed, to better describe the history of the disease, and the possibilities of the diagnosis.*European Journal of Endocrinology* 165 819–821**Case Report**

Diagnosis of hormone-secreting pituitary adenoma is possible on dry bones (1).

The following skeleton was discovered in 1985 during archaeological excavations on the central plateau of the Acropolis of Eleutherna (region of Rethymnon, Crete), conducted by the University of Crete under the direction of T Kalpaxis. Skeletal remains of three individuals were discovered in a very disturbed grave at the narthex of a 7th century church (Z2, tomb A; Fig. 1) (2).

A complete anthropological and palaeopathological examination – performed only recently – detected some skull abnormalities.



**Figure 1** View of the excavated grave in the narthex of the 7th century church (arrow).

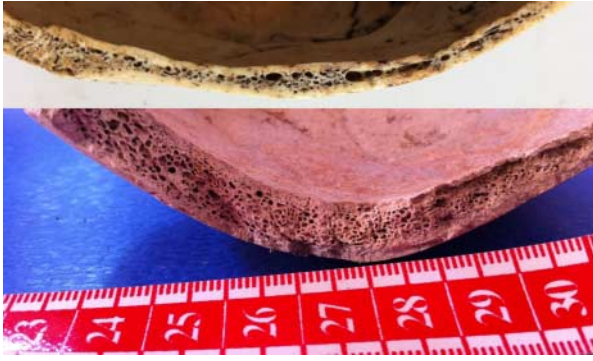
The skeleton had only conserved fragments of the long bones (Table 1), and no part of the pelvis: the sex of the individual remained unknown, but the age at death has been estimated to be between 25 and 40 years (3).

The skull was characterised by a very dense and strong thickness without any corticomedullary de-differentiation (frontal bone: 0.9 cm and occipital bone: 2.1 cm; Fig. 2). Bone reliefs (brow, nuchal crest and mastoid apophyses) were particularly robust. The sella turcica measured 2.0 cm at the anteroposterior axis, and was 2.5 cm at the transversal axis (the right lateral ridge being partially destroyed; Fig. 3). The diagnosis was acromegaly, the overproduction of GH being caused by a tumour of the pituitary gland (macroadenoma) (4).

In total 14 teeth were conserved, with a severe occlusal wear (grade 4+) (5) and monstrous dental calculus on the posterior molars (facilitated by

**Table 1** List and particularities of conserved bones from the skeleton (Z2, tomb A, b2).

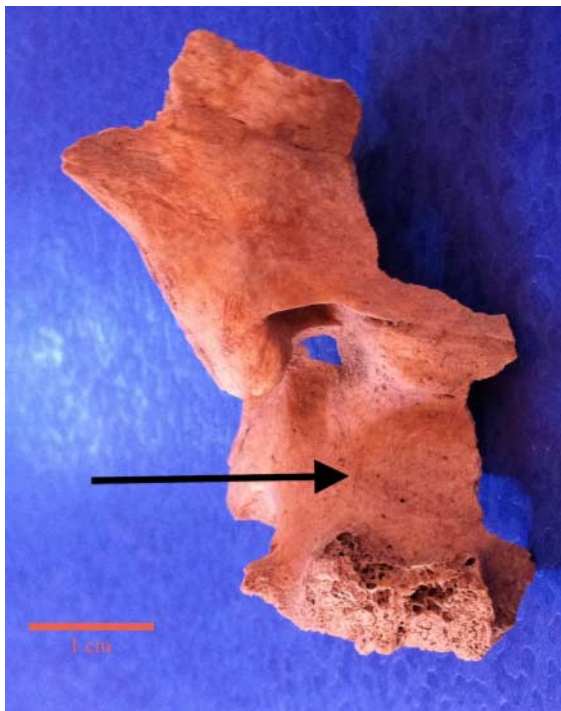
Bone	Particularity
Clavicles	Fragments of left and right sides
Scapulas	Moderate and slight osteoarthritis, on the right and left sides of the glena, respectively
Humerus	Fragment of a head
Ribs	Eight fragments
Hyoid bone	Left and right wings
Cervical vertebra	Fragments of first and another vertebra (with moderate body osteoarthritis)



**Figure 2** Sectional view of the frontal bone characterised by huge thickness (normal frontal bone is presented above). Full colour version of this figure is available via <http://dx.doi.org/10.1530/EJE-11-0712>.

macroglossia?). Fragments of the mandible showed teeth gapping. Unfortunately, no extremity (hand or foot) was conserved.

Cases of acromegaly are pretty rare in archaeology (6) or dubious (7). Historical cases have also been described, such as the Roman Emperor Maximinus I Thrax (died in 238 AD) whose coins showed the perfect aspect of facial deformation: mandibular overgrowth leading to prognathism, jaw malocclusion and brow protrusion; more, his thumb was said to be so large that he could wear his wife's bracelet as a foot ring... (8). The same with portraits of the pharaoh Ptolemy I Soter



**Figure 3** General view of the conserved sphenoid bone (in anatomical position); sella turcica is indicated by an arrow. Full colour version of this figure is available via <http://dx.doi.org/10.1530/EJE-11-0712>.

(died in 283 BC) (9) presenting a huge prognathism and forehead, that could be found on many of the succeeding Ptolemy pharaohs, hypothesising a familiar condition of acromegaly or pituitary dysfunction (10). Perhaps it's a diagnosis that could be confirmed by palaeopathological examination of their skeletons?

More recent cases have been reported in historical records, some being related to gigantism only (without any precise relationship to the origin of this anomaly) (11). The list includes Thomas Hassler, the giant of Tegernsee (Germany) (12–16), the Irish giant Cornelius Magrath (who died in 1760) (17–20) and the two Irish giants named O'Brien (Patrick Cotter and Charles Byrne, respectively, who died in 1806 and 1783). The hoax of the Cardiff giant is of scientific and historical interest, proving the value of forensic science and general medical knowledge (a 3 m tall purported 'petrified man' uncovered in Cardiff, NY, USA, formerly made of gypsum by an atheist) (21). Lastly, although the skeleton is missing, some claim that the Biblical giant Goliath and his family suffered from acromegaly... Perhaps this helps to bridge the gap between myth and science?

### Declaration of interest

The authors declare that there is no conflict of interest that could be perceived as prejudicing the impartiality of the research reported.

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