Pituitary Disease from the Past: A Rare Case of Gigantism in Skeletal Remains from the Roman Imperial Age

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A very tall skeleton, found during archaeological excavations near Rome (Italy) and dated back to the Imperial Age (3rd century AD), was affected by pituitary gigantism, a rare growth disease seldom documented in ancient times. This case represents the first description of this endocrine disease in a complete skeleton from the past.

The skeleton T.30 was found in the Imperial Age necropolis of Torre Serpentana (7 km north of Rome) and belonged to a young male (age range, 16–20 yr) with a very tall but normally proportioned stature estimated around 202 cm (1). Some long bones and vertebral bodies did not show complete epiphyseal union, and therefore the stature would probably have been taller if he had lived longer. The average male Roman stature was around 167 cm during the Imperial Age, and the difference with T.30 is 35 cm (21% over the average stature of the population), indicating an overgrowth syndrome (2); all the main long bone lengths are over 5 SD (Fig. 1).

The most evident anomaly was represented by the large size of all the bones: the postcranial bones were very long, with regular morphology but not pronounced musculature. The hands and feet presented extremely long bones (Fig. 1). Other alterations involved the skull, although partially fragmented; the frontal bone showed a light form of hyperostosis frontalis interna, and in the hypophyseal fossa of the sella turcica, the pituitary area appeared enlarged and depressed. The partial dimensions of sella turcica were 16 mm at the anteroposterior axis and 17 mm at the transversal axis, but they could be larger and longer because the bone was only partially conserved (Fig. 1A). The jaw was very wide and long with large mandibular condyles and a prominent chin. Some evidence, such as dental wear and stage of fusion of the cranial sutures, indicated an age at death of over 20 yr, suggesting a delay of the epiphyseal closure.

The proximal epiphysis of the femurs showed the head and the fovea capitis vertically rotated, as well as the proximal epiphysis of the tibias, tilted toward the midline and resulting in genu valgum.

The pathological features suggest that this is the most probable diagnosis and more consistent with a pituitary disturbance than any other syndromes resulting in skeletal overgrowth; the very long proportionate bones and some delayed epiphyseal closure, combined with possible modifications of the sella turcica, agree with hypophyseal abnormality onset during childhood, leading to a diagnosis of pituitary gigantism, probably due to a pituitary adenoma (3). Other elements, such as alteration of the frontal bone and femur capitis, support the diagnosis (4, 5).

Gigantism is a very rare disease (modern annual incidence, three per 1 million), and the life span of the affected people is not high; the disease has been rarely documented in ancient skeletal remains, whereas more common cases of acromegaly were reported (6). The presence of the disease in the Roman world during the Imperial Age is unknown, but the Emperor Maximinus the Thrax (235–238 AD) was described by literary sources as a “human mountain,” and therefore he may well have been affected by gigantism or acromegaly (7). Therefore, this case represents an extraordinary discovery, for the first time documenting gigantism in a complete ancient skeleton, providing an important contribution to paleopathological literature.
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References


**FIG. 1.** A, Fragment of occipital bones of individual T.30, where the pituitary area of the sella turcica is partially observable in the red box. B, Comparison of the first metatarsal bone between T.30 and a normal male individual. C, Comparison of the long bones (humerus and tibia) between T.30 and a normal male individual.