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Diffuse Calvarial Hyperstosis

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Key words

- Bone
- Diffuse
- Osteolytic
- Skull
- Thickening

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CASE DESCRIPTION

A 26-year-old man known to have end-stage renal disease on regular hemodialysis, tertiary hyperparathyroidism, extensive brown tumors, and severe developmental impairment with skeletal deformities was referred to us for macrocephaly. On examination, the patient was chairbound, with speech and motor developmental delay, and frontal bossing. Brain computed tomography, bone window (Figure 1A and B) revealed diffuse hyperstosis of the calvarium and facial bones expansion with multiple sclerotic and lytic areas, causing subsequent narrowing of the basilar skull foramina. No fractures were noted. Brain magnetic resonance imaging (Figure 1C and D) demonstrated an extensive expansile bone marrow abnormality in the calvarium and skull base. There was mild generalized prominence of the cortical sulci and ventricular system. The

Calvarial hyperstosis can be an idiopathic benign finding or secondary to a metabolic pathology. We herein describe a case of diffuse calvarial hyperstosis. A 26-year-old man known to have end-stage renal disease on regular hemodialysis, tertiary hyperparathyroidism, extensive brown tumors, and severe developmental impairment with skeletal deformities was referred to us for macrocephaly. On examination, the patient was chairbound, with speech and motor developmental delay, and frontal bossing. Brain computed tomography revealed diffuse hyperstosis of the calvarium and facial bones expansion with multiple sclerotic and lytic areas, causing subsequent narrowing of the basilar skull foramina. Brain magnetic resonance imaging demonstrated an extensive expansile bone marrow abnormality in the calvarium and skull base. There was mild generalized prominence of cortical sulci and ventricular system. The findings were in keeping with his known hypermetabolic state and tertiary hyperparathyroidism. The patient was managed conservatively with regular follow-up in the clinic.

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Diffuse calvarial hyperstosis can be diagnosed incidentally on imaging or develop secondarily to a clinical condition. The differential diagnoses of diffuse calvarial hyperstosis include cerebrospinal fluid overshunting, spontaneous intracranial hypotension, severe long-standing anemia, thalassemia, rickets, hypermetabolic bone disease, fibrous dysplasia, Paget disease, osteopetrosis, acromegaly, phenytoininduced, and hyperstosis frontalis interna.¹⁻³ Our patient had end-stage renal disease and subsequent tertiary hyperparathyroidism. Therefore the diagnosis of diffuse calvarial hyperstosis secondary to hypermetabolic state was rendered.

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Figure 1. (A and B) Brain computed tomography, bone window, revealed diffuse hyperstosis (maximum thickness: 4.5 cm) of the calvarium and facial bones expansion with multiple sclerotic and lytic areas, causing subsequent narrowing of the basilar skull foramina. No fractures were noted. (C and D) T1/T2-weighted brain magnetic resonance imaging

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