Visual Vignette

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Case presentation: A 26-year-old woman presented with a history since childhood of multiple fractures following minor falls. There was no history of a developmental delay or an intellectual disability. She was born out of a consanguineous marriage, and her sister had a similar history of illness. On examination, she was noted to have a proportionate short stature (140 cm; midparental height of 156 cm), short stubby hands and feet, and dysmorphic facial features, including frontal bossing, a beaked nose, low set ears, midfacial hypoplasia, micrognathia, and blue sclera. Dental examination showed persistence of deciduous teeth with crowding. She had normal secondary sexual characters. The rest of the systemic examination was unremarkable. Bone mineral biochemistry was normal except for low 25-hydroxyvitamin D levels (17 ng/mL). We performed an X-ray of both hands, the left shoulder, and the skull (Figs. 1 through 3). **What is the diagnosis?**

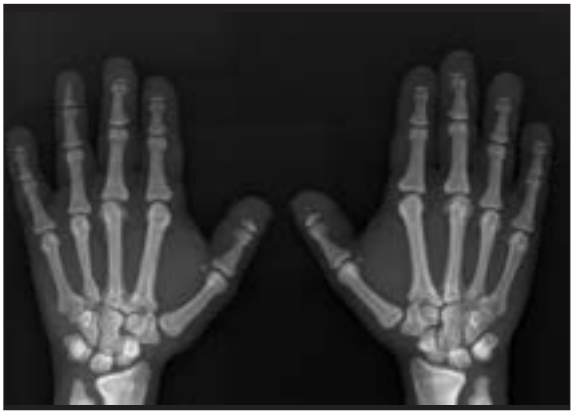

Fig. 1.

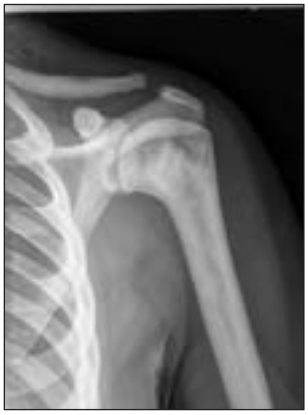

Fig. 2.

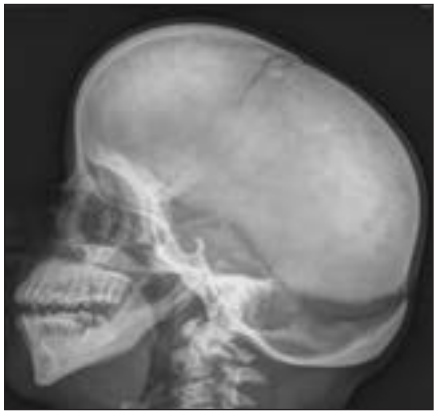

Fig. 3.

Answer: Pyknodysostosis. In addition to her clinical features, the patient had the classical radiologic findings characteristic of a diagnosis of pyknodysostosis. The X-ray of the hand and shoulder showed acral osteolysis of the terminal phalanges (Fig. 1) and aplasia of the acromial end of the clavicle (Fig. 2), respectively. The X-ray of the skull (Fig. 3) displayed an open anterior fontanelle and sutures, wormian bones, nonpneumatized paranasal sinuses, and an obtuse mandibular angle. Pyknodysostosis is a rare autosomal recessive osteosclerotic skeletal dysplasia. To date, less than 200 cases of this disease have been reported in the literature (1). Pyknodysostosis is caused by the inactivation of a mutation in the lysosomal cathepsin K gene, located on chromosome 1q21 (2). The reduced protease activity leads to less degradation of type 1 collagen, which constitutes 95% of the organic bone matrix. As a consequence, the abnormally dense bone is brittle, leading to fractures, especially in long bones. The diagnosis is based on characteristic clinical and radiographic findings. Pathognomonic diagnostic features include diffuse osteosclerosis with recurrent fragility fractures, short stature, acro-osteolysis of the terminal phalanges, and typical skull changes (3). Acro-osteolysis with sclerosis of the terminal phalanges is an essential pathologic feature on radiographs in pyknodysostosis. Differential diagnosis includes osteopetrosis, idiopathic acro-osteolysis, and cleidocranial dysplasia. Cognitive function and life expectancy of the subjects is normal. No specific treatment has been identified. Despite recurrent fractures, healing is normal. Supportive management includes fracture prevention, treatment, and dental care. The patient was treated with cholecalciferol for vitamin D deficiency.

DISCLOSURE

The authors have no multiplicity of interest to disclose.

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