

# Visual Vignette

Submitted by

Kishore K. Behera, MD,<sup>1</sup> Thomas V. Paul, MD, DNB,<sup>1</sup> Sivan Arulselvan, MD,<sup>1</sup> and Ajoy M. Varghese, MS<sup>2</sup>  
From the <sup>1</sup>Department of Endocrinology, Diabetes and Metabolism and <sup>2</sup>Department of Otorhinolaryngology, Unit II, Christian Medical College, Vellore, Tamil Nadu 632004, India

**Case Presentation:** A 40-year-old woman presented with a 3-year history of multiple musculoskeletal complaints. Earlier she had sustained fractures of the left fourth and fifth metatarsals after trivial trauma. Subsequent development of bilateral symmetric proximal muscle weakness and pain in her lower limbs caused considerable functional impairment. She also complained of having right nasal blockage periodically. Anterior rhinoscopy showed normal findings. Biochemical evaluation revealed a low serum phosphorus level of 1.2 mg/dL (reference range, 2.5 to 4.6) in conjunction with inappropriate phosphaturia and a maximal tubular reabsorption of phosphate corrected for glomerular filtration rate of 0.5 (reference range, 2.5 to 4.5). She also had an elevated alkaline phosphatase value of 161 U/L and a parathyroid hormone concentration of 128 pg/mL (reference range, 10 to 69) in the presence of normocalcemia (corrected calcium, 9.3 mg/dL; reference range, 8.3 to 10.2). Her 25-hydroxyvitamin D level was 29.4 ng/mL (reference range, 20 to 55). The work-up for renal tubular acidosis was negative. Treatment was initiated with phosphate supplementation and active vitamin D, which yielded marginal improvement. Further evaluation included computed tomography of the paranasal sinuses (Fig. 1). She underwent surgical treatment, after which she had remarkable improvement. Her x-ray examinations of the pelvis before treatment and at follow-up are shown in Figure 2 A and B. During the last follow-up, she was ambulatory, and her serum phosphorus level was 3.0 mg/dL. **What is the diagnosis?**



Fig. 1

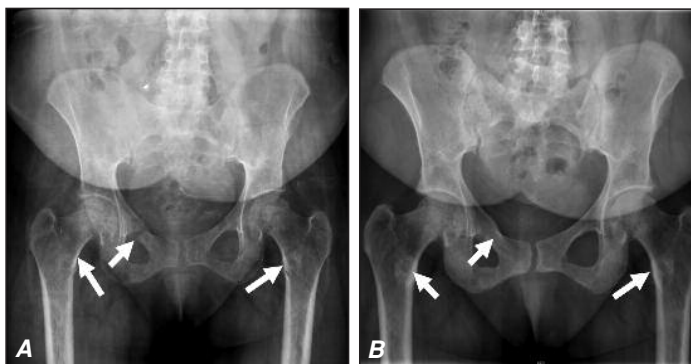


Fig. 2

**Answer:** Tumor-induced osteomalacia (TIO). A mass involving the right middle nasal turbinate and meatus and eroding the medial wall of the maxillary sinus is shown in Figure 1. Pseudofractures involving both proximal femurs and a fracture in the pubic ramus are evident in Figure 2 A. A follow-up x-ray study of the pelvis 12 months after tumor excision (Fig. 2 B) demonstrated healing of both femoral pseudofractures and the fracture of the pubic ramus.

Hypophosphatemia is usually due to either decreased intestinal absorption or excessive renal loss of phosphorus. Chronic hypophosphatemia, as in this patient, usually signifies renal tubular wasting. In such cases, TIO should be considered—especially if the onset is in adulthood. Tumor-induced osteomalacia is a rare cause of adult-onset hypophosphatemic osteomalacia associated with tumors of mesenchymal origin. Tumor-derived products, including fibroblast growth factor 23, have been implicated in its pathogenesis (1). The majority of reported tumors are benign, locally occult lesions, most commonly found in bony or soft tissue sites in the head and neck (2). Hemangiopericytoma constitutes approximately 70% to 80% of all tumors associated with TIO (3). True malignant tumors are uncommon, but invasive, recurrent, and metastatic lesions have been rarely described.

Our patient had a proliferative mass involving the right middle meatus of the nose, and she underwent total excision of the tumor. The histopathologic findings were consistent with the diagnosis of hemangiopericytoma, which also showed a high mitotic index. She also received local radiation therapy after excision of the tumor. The patient had complete resolution of symptoms and normalization of serum phosphorus levels after treatment.

## REFERENCES

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