

Abstract

Vitamin D deficiency is common in latitudes away from the equator. Risk factors for vitamin D deficiency are dark skinned individuals, exclusively breast-fed babies, lack of dietary vitamin D. Causes are reduced sun exposure, decreased dietary intake, decreased endogenous production and end-organ resistance. Complication include rickets, osteomalacia, and other bony disorders, and to some degree other disorder such as hyperparathyroidism, bone pain, muscle weakness and fractures.

Introduction

Vitamin D needed for healthy bones and to prevent rickets

American Association of Pediatrics and the NHS recommend daily supplemental intake of 400 international units of vitamin D soon after birth, unless received at least 1 L of vitamin D fortified formula

Breast milk has only 9.8 IU of vitamin D per cup

Infant can make vitamin D if skin is exposed to sunlight

Vitamin D Deficiency measured by serum 25-hydroxyvitamin D (25OHD)

Vitamin D Sufficiency – 25OHD \geq 20ng/mL (50nmol/L)

Vitamin D Insufficiency – 25OHD 12 to 20 ng/mL (30 to 50 nmol/L)

Vitamin D Deficiency – 25OHD $<$ 12 ng/mL ($<$ 30 nmol/L)

Case Report

A otherwise healthy, full-term, 6-month old, exclusively breast-fed African American boy presented to Emergency Department (ED) at URMC, after two episodes of reported seizures at home. Mother denies accidental ingestions, trauma, abuse, family history of seizures. Up-to-date on vaccinations and no prior history of seizures per outpatient pediatrician’s offices. Physical exam revealed an appropriately interactive, active child in NAD. Vitals within normal limits. No significant rashes, bruises were noted. No signs of neck pain. Rest of neuro and physical exam was benign. While at the ED, another 7-8 second episode of staring and non-responsiveness was noted by the ED nurse, which was self-resolved.

Pertinent Labs:

Calcium:	Low - 5.5mg/dL (Ref Range for age 8.5 – 10.3)
Phosphate:	Low -
Parathyroid hormone PTH:	high
25OHD	11

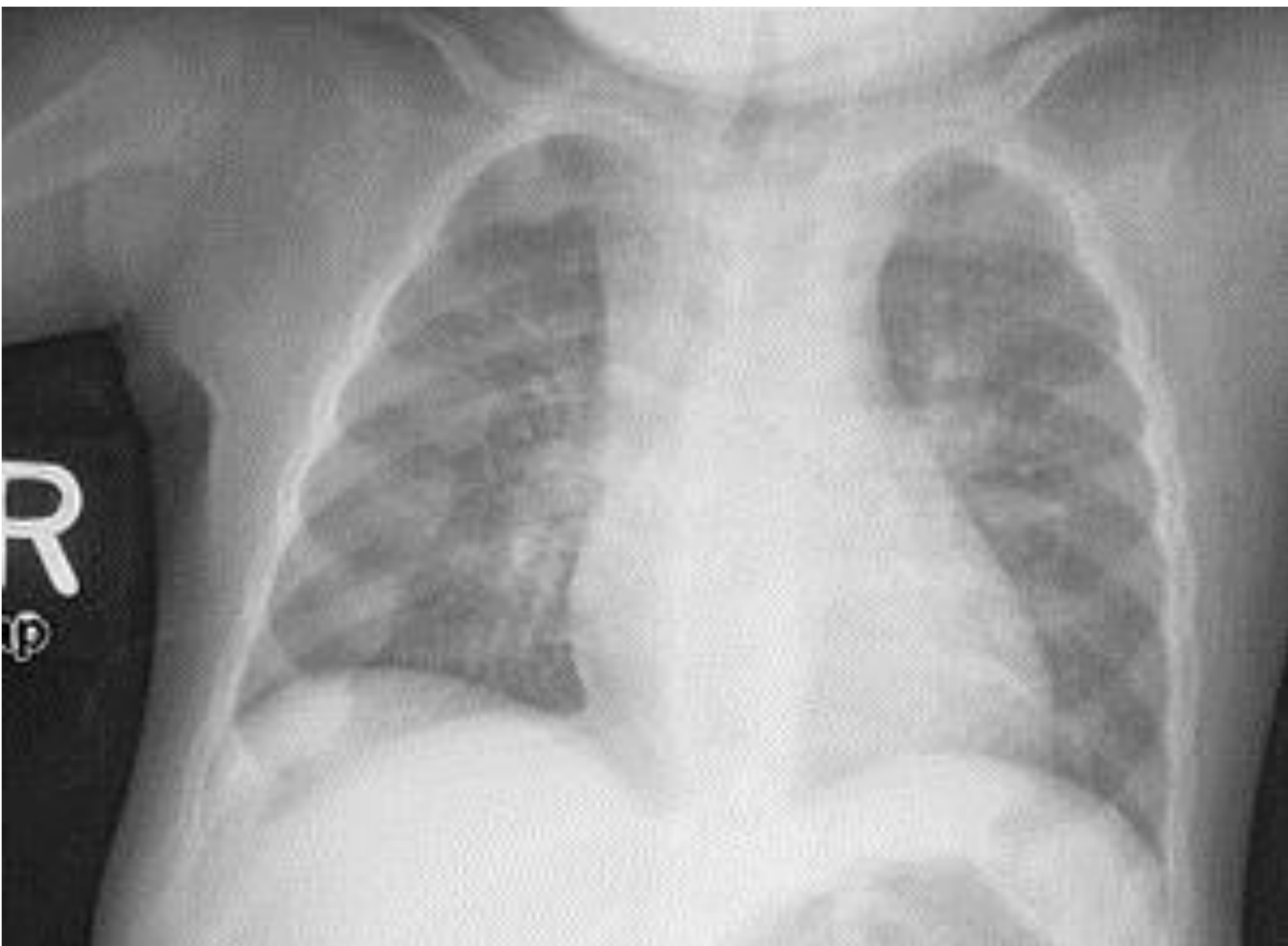


Image descript Box 1

Rachitic Rosary – prominent knobs of bones at costochondral joints

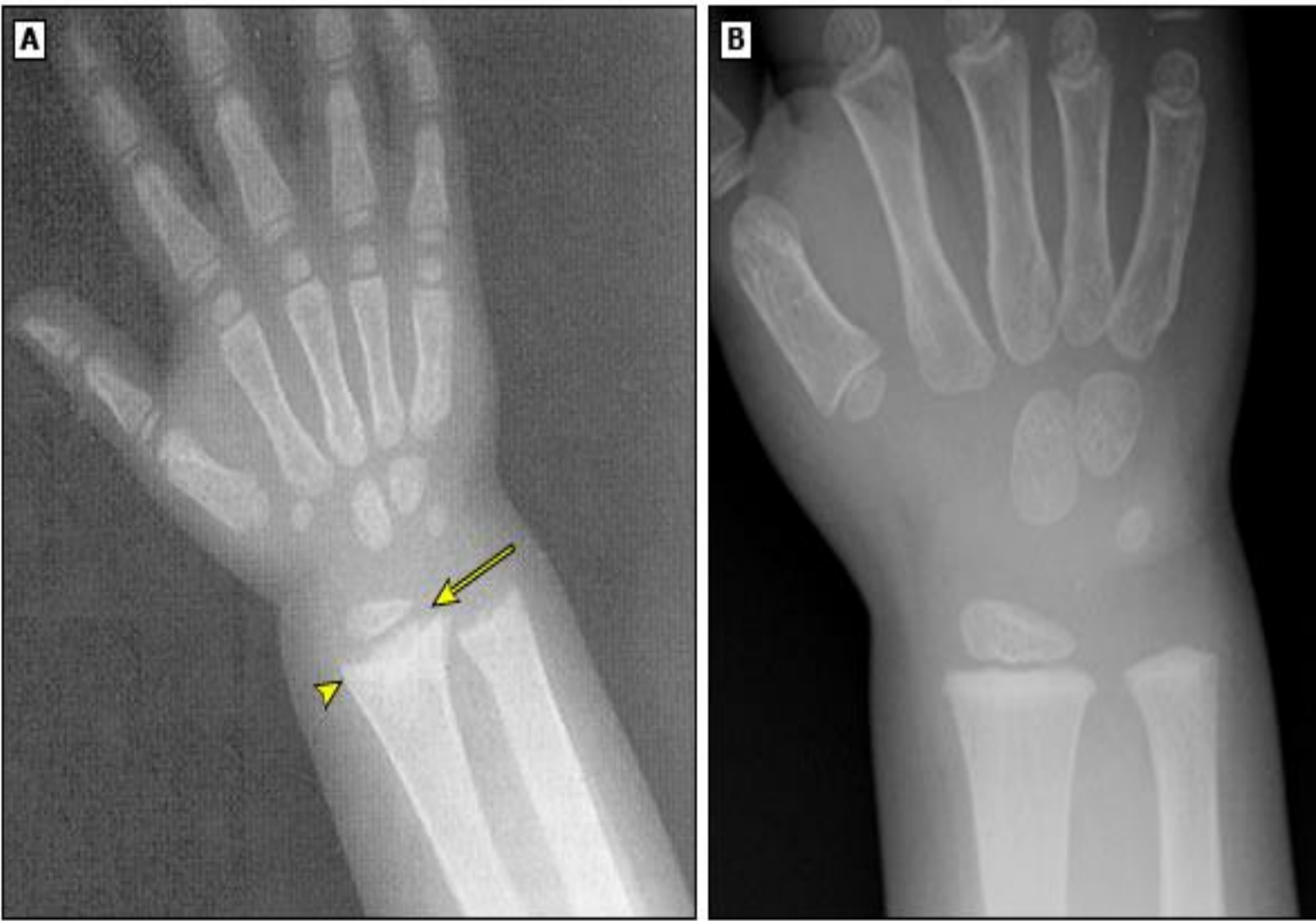


Image descript Box 2

Rickets:

Distal Ulna widening of epiphyseal plate, Loss of definition

Fig A: rickets in a 3 y/o

Fig B: Healthy 3 y/o

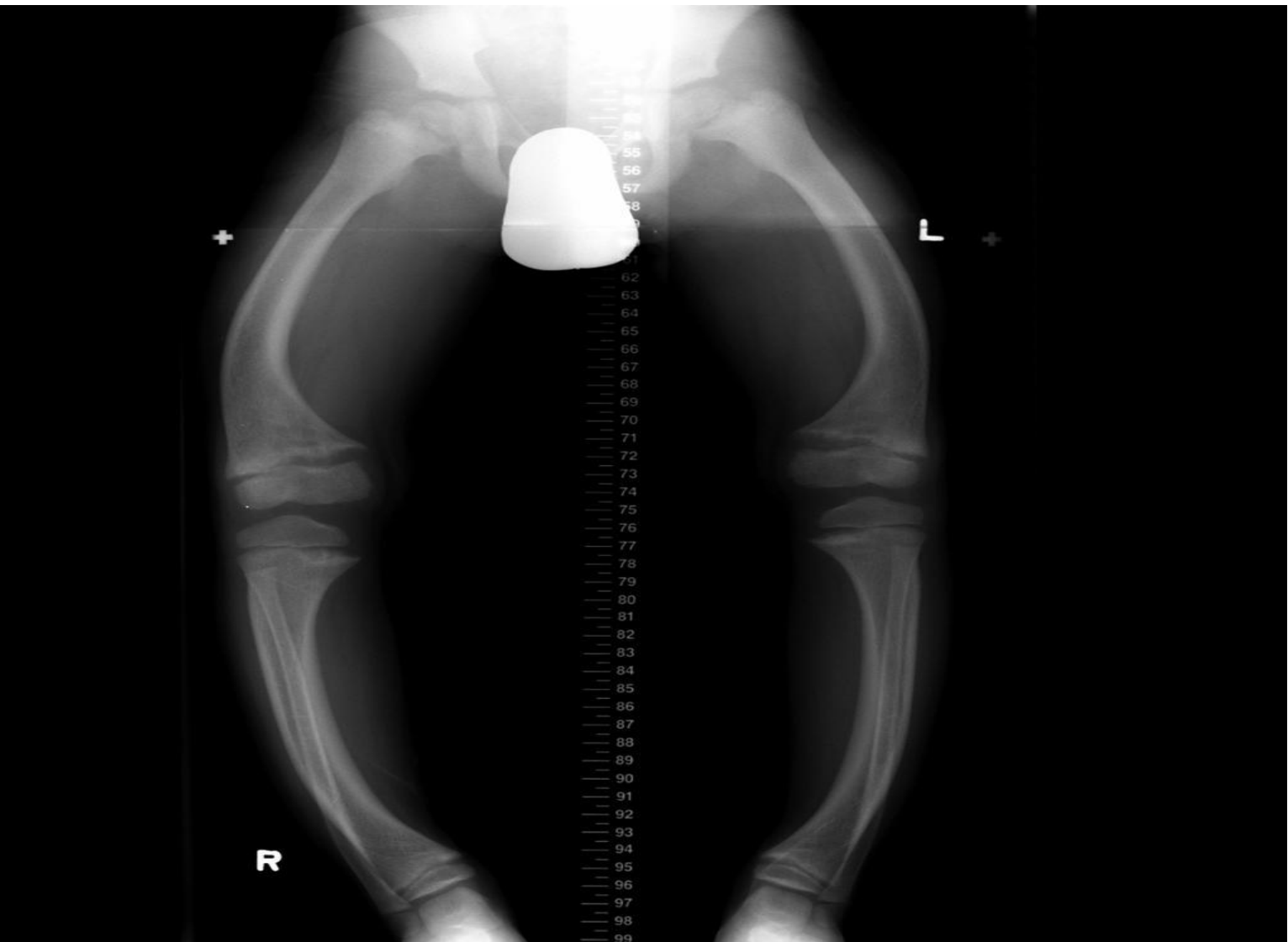


Image descript Box 3

Bowing of the legs – seen in rickets

Case Report (Continued)

Diagnosis of secondary hypocalcemia, due to vitamin D deficiency.

XR of upper extremity was obtained to confirm the diagnosis of rickets. Pt was admitted and was treated with high dose vitamin D. Infusion of calcium initially was held to prevent “Hungry Bone Syndrome”.

Pt was discharged after three days, once normalization of both the calcium levels and vitamin D. No more seizure were noticed.

Discussion

Vitamin D deficiency in infants generally presents as small stature and bone deformities.

This was a unique case as patient presented with seizures.

Treatment of hypocalcemia was vitamin D therapy, as Hungry Bone Syndrome can occur if calcium was given the patient, exacerbating the situation.

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Key References

Yochum TR, Rowe LJ, Yochum and Rowe's Essentials of Skeletal Radiology, Third Edition. Philadelphia: Lippincott Williams & Wilkins, 2004. Copyright © 2004 Lippincott Williams & Wilkins

Rao SB, Crawford AH. Traumatic and Acquired Wrist Disorders in Children. In: The Wrist and its Disorders, Lichtman DM, Alexander AH (Eds), WB Saunders, 1999. Copyright © 1999 Elsevier