



## IMAGES IN PAEDIATRICS

## Vitamin D deficiency as cause of rickets in a patient of African origin



### Raquitismo carencial en un paciente de raza negra

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Rickets is a childhood disease characterised by deficient bone mineralization during growth. The most frequent cause is vitamin D deficiency and/or low dietary calcium intake.<sup>1</sup>

We present the case of a girl aged 2 years and 10 months of African descent brought in for assessment of bone deformities (Fig. 1) and unstable gait, so that the patient required help walking. The relevant findings of the history-taking were exclusive breastfeeding through age 18 months followed by deficient supplementary feeding thereafter, without supplementation with vitamin D in the first year of life and prolonged periods inside the house. The patient exhibited a limp from the moment she started walking and refusal to walk due to pain. Since rickets was suspected, we performed laboratory tests (calcium, 8.4 mg/dL, phosphorus, 2.3 mg/dL, alkaline phosphatase, 2948 U/L; parathyroid

hormone, 972.9 pg/mL, 25-hydroxyvitamin D < 10.8 ng/mL) and imaging tests that confirmed severe nutritional rickets (Fig. 2). Treatment started with administration of mega-doses of vitamin D, calcium and alfacalcidol, with subsequent administration of cholecalciferol and dietary changes, with clinical, radiological and laboratory improvement at the time of this writing (Fig. 3). Testing of the mother and brother found deficient vitamin D levels.

At present, nutritional rickets has been practically eradicated in developed countries, yet its incidence has been increasing, especially in the subset of immigrants with a dark phototype, so we would like to emphasise the importance of the early detection of risk factors, since delays in diagnosis and treatment in advanced cases can result in permanent bone deformities.<sup>2</sup>

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**Figure 1** Generalised deformities with epiphyseal widening in wrists and ankles, rachitic rosary, bowing of both femurs.



**Figure 2** Imaging features suggestive of rickets, with significant osteopenia and diaphyseal fracture in both fibulas associated with periosteal reaction. General long bone metaphyseal widening, cupping and fraying. Marked longitudinal widening of the growth plates. Generalised bowing of long bone diaphyses.



**Figure 3** Clear radiological and deformity improvement, although some deformities remain due to the baseline severity, with persistent shortening of the lower body with coxa vara and genu valgum.

## References

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