Physiological Periostitis: Reporting of a Medical Conundrum!

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ABSTRACT

Physiological periostitis is a known, typically symmetric radiological finding in infants between 1 and 6 months of age. Traumatic periosteal new bone formation may be bilateral and one of the close differential diagnoses of physiological periostitis, but there is usually other evidence of fracture or trauma. Pediatricians and radiologists should be aware of this benign entity, so that unnecessary investigation and treatment may be avoided. We describe a two-months-old female child, who presented with swelling of both the legs and was confused with osteomyelitis initially, but later came to be diagnosed as physiological periostitis after ruling out other common diagnosis.

Key words: Benign; infant; periostitis; self-resolving; tibiae

Introduction

Physiological periostitis is a less reported, benign entity, often encountered by pediatrician and radiologist. We report a case of "Physiological periostitis" in a two months old baby girl; in the context of review of recent literature and it's differentiation from other pathological conditions.

Case Report

A two-month-old girl was admitted with a history of swelling of the shin of both legs [Figure 1]. There was no history of trauma or fever. There was no history suggestive of health-seeking behavior or child abuse by the parents or other family members. No history of any vitamin supplementation or prostaglandin infusions in the child since birth. Antenatal and natal history was uneventful. She had not received any intravenous or oral antibiotics since her birth two months ago. At presentation, she was active, afebrile, and moving all four limbs normally. On examination, there was bilateral, mild, non-tender swelling on the shins, which appeared more prominent on the left side. Skeletal survey showed no evidence of fracture but had bilaterally almost symmetrical periosteal reaction on the medial aspect of tibia [Figure 2]. Other investigations showed hemoglobin level of 13.9 gm/dl, total leukocyte count of 8,600/mm^2, total platelet count 2.2 × 10^5/mm^2, C - reactive protein 0.7 mg/dl, ESR 8 mm/hour, and no growth on BACTEC blood culture. Maternal VDRL test was negative. Both mother and baby had no lesions suggestive of syphilis. Infantogram, done under optimal radiation exposure, revealed no similar lesions in other parts of the body, thus ruling out infantile hyperostosis and battered baby syndrome. Based on the above history, investigations, and ruling out other common causes, a diagnosis of "physiological periostitis" was made, and parents were reassured regarding the benign nature of the disease.

Follow up

A month after discharge, the baby was reviewed and found to be feeding well and gaining adequate weight. The swelling of limbs had reduced almost completely.

Discussion

Etiology and demographics

Physiological periostitis is a well documented radiological finding in both preterm and term babies between 1- 6 months of age group and is more commonly seen among 1 to 4 months old infants.[1,2] The incidence of this condition is not known. Periostitis can be due to various causes including infections and trauma, which elevate the periosteum

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from the cortex and form various patterns of periosteal reaction.[1,2] Physiological periostitis is not an inflammatory condition as the name suggests, instead it is a periosteal reaction. The periosteum in children is more active and less adherent to the cortex than in adult. Thus, periosteal reaction can occur earlier and appear more aggressive in children than in adults.[1] In evaluating periosteal reaction, it is important to recognize its presence rather than the specific subtype of periosteal reaction: Aggressive or non-aggressive form, as there is significant overlap in disease entities that result in periosteal reaction.[1] Physiological periostitis affects both genders equally and is almost never seen before neonatal age.[3]

Clinical and imaging findings

The usual appearance on radiograph is single-layered, thin periosteal reaction (commonly but not exclusively <2 mm) involving one aspect of the long bones.[1] It is commonly seen in long bones and invariably symmetrical in distribution, although occasionally asymmetrical.[2,4] The periosteal reaction is not always concentric in distribution and may present only on one aspect of the bone. There is no consistency as to the site of involvement, except in the tibia where the periostitis is invariably on the medial aspect [Figure 3]. However, periostitis of the metaphysis is rare.[2] It is always on the diaphysis and may extend to the metaphysis to a variable extent, but it has not been observed to reach the end of metaphysis.[3] Although most cases of physiological periostitis of distal limb bones reported in literature show similar changes in proximal bones, this may not be the situation in all cases, as seen in our case in which only the tibiae were affected. The exact etiology of this condition is not known, but rapid growth of infant and loosely adherent periosteum may account for this finding.[5] It is more common in premature babies.[6] The periosteal reaction may be thick or thin in size.[6] In a case with normal physical findings and normal serological-biochemical data, physiological periostitis can be suspected and diagnosed.[7]

Differential diagnoses

Before the age of 6 months, the most common causes are physiologic periostitis of the newborn, Caffey's disease, and periostitis related to prostaglandin use. Bilateral periosteal reaction that appears after 6 months should suggest Hypervitaminosis A and venous stasis.[3] Traumatic periostitis may be bilateral and multiple, but there is usually other evidence of fracture or hematoma. In osteomyelitis, periosteal reaction will not affect multiple bones symmetrically.[3] This condition can easily be misdiagnosed as child abuse or pathological periostitis and hence is more important.[7] Prostaglandin osteopathy, infantile cortical hyperostosis, Hypervitaminosis A, and congenital syphilis are other causes of periostitis in infants.[8]

Treatment and prognosis

This condition is benign and self-limiting. It needs no pharmacological or surgical treatment and has an excellent prognosis.

Figure 1: 2 months old, female, bilaterally almost symmetrical swelling of legs

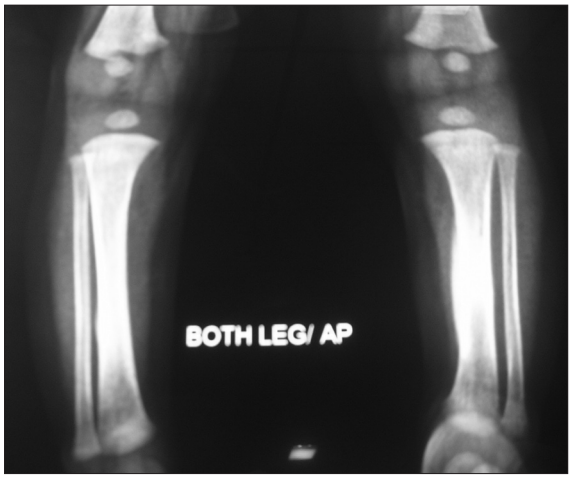

Figure 2: 2 months old, female, radiograph of both legs in AP view showing physiological periostitis

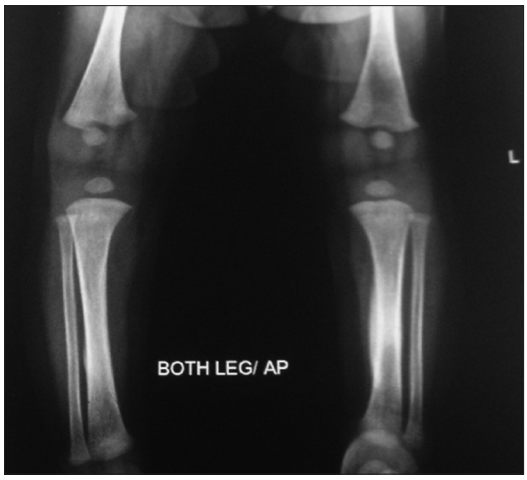

Figure 3: The same in slightly lower resolution to show the thickness of cortex less than 2 mm

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