

Radiology Quiz

Behind bone lines

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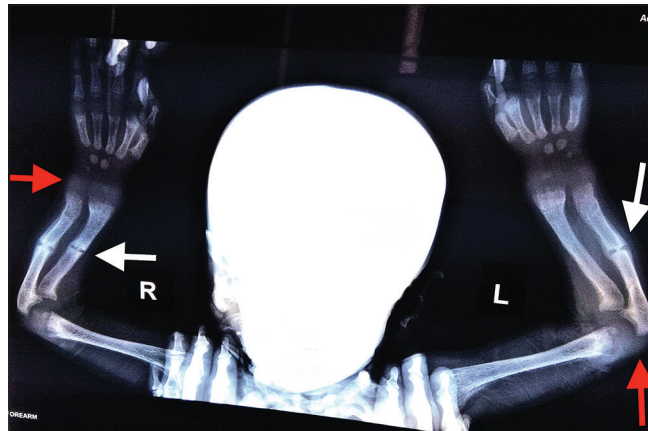
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HISTORY

A 4-year-old female presented with irritability, failure to thrive, potbelly, and bilateral forearm pain. There was also some bowing in both legs noted. Her parents belonged to low socioeconomic status. Her bilateral forearm radiographs were done as part of the investigations [Figure 1].

- What are the radiographic findings?
- What is the diagnosis?



FINDINGS

The radiograph shows a transverse lucent band perpendicular to the axis of the diaphysis of the right radius and ulna, and the contralateral ulna (Looser's zones denoted by the white arrows) [Figure 1]. Metaphysical cupping of both ends of the forearm bones is also appreciated. There is minimal associated sclerosis or callus formation associated with the bands along with metaphysical rarefaction and widening at both proximal and distal ends of forearm bones (denoted by red arrows).

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DIAGNOSIS

Looser's zones in bilateral forearm bones.

DISCUSSION

Looser's zone is an uncommon phenomenon presenting as one or more radiological lucent lines traversing perpendicular to the cortical bone as a late manifestation of osteomalacia or rickets.^[1] A poorly-defined, transverse zone of rarefaction over an apparently normal bone appears as broad bands of lucency with parallel margins in radiographs. There is minimal sclerosis or callus formation (if on treatment) noted. The condition, named after Swiss surgeon Emil Looser, is also described in the literature as Milkman's lines, cortical infraction, umbau zonen, pseudofracture, or insufficiency fracture.^[1,2]

Looser's zone represents unmineralized osteoid deposition at sites of stress or along nutrient vessels. These are often bilateral and symmetric and may or may not be associated with trauma. These are considered as insufficiency-type stress fractures in the setting of osteomalacia and the term pseudo-fracture might be incorrect. Common sites include the proximal femur, ischio-pubis, ilio-pubis, infra-glenoid scapula, ribs, upper ulna, tibia, fibula, and radius. Mechanical stress of a major vessel overlying the non-calcified cortical bone in osteomalacia is considered as the reason for their occurrence and also supports their symmetrical presentation.^[2] Their characteristic radiological appearance leads to prompt diagnosis, but care should be taken to rule out atypical insufficiency fractures in selected cases.^[3] The potential of full-blown fracture exists and caution in high-risk cases and those involving anatomical sites with high stresses, like the upper femur, is warranted.^[4] The management of Looser's zone with fractures can be managed on a case-by-case basis and both conservative or operative options can be chosen.^[5,6] Although Looser's zones are well described in the medical texts, frequent revision of this entity may help clinicians in routine practice. Their presence at uncommon locations should also be borne in mind to avoid improper diagnosis or treatment.

AUTHORS' CONTRIBUTION

The author has critically reviewed and approved the final draft and is responsible for the manuscript's content and similarity index.

USE OF ARTIFICIAL INTELLIGENCE FOR MANUSCRIPT PREPARATION

The author confirms that there was no use of Artificial Intelligence (AI) (chstbots) for assisting in writing or editing the manuscript and no images were manipulated using the AI.

DECLARATION OF PATIENT CONSENT

The author certifies that he has obtained all appropriate patient consent forms. In the form, the patient's parent has given his consent for the patient's images and other clinical information to be reported in the journal. The parent understands that the patient's name and initials will not be published, and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

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CONFLICTS OF INTEREST

There are no conflicting relationships or activities.

REFERENCES

1. Ahmad F, Shah B, Nabi G, Sofi F. Looser's zone. *Oman Med J* 2010;25:141.
2. Le May M, Blunt JW Jr. A factor determining the location of pseudo fractures in osteomalacia. *J Clin Invest* 1949;28:521-5.
3. McKenna MJ, Kleerekoper M, Ellis BI, Rao DS, Parfitt AM, Frame B. Atypical insufficiency fractures confused with Looser zones of osteomalacia. *Bone* 1987;8:71-8.
4. Dharmshaktu GS. Antiepileptic therapy, osteomalacia and synchronous fractures: Don't lose looser zones. *J Family Med Prim Care* 2017;6:167-8.
5. Lee C, Lashari S. Pseudofracture of the neck of femur secondary to osteomalacia. *J Bone Joint Surg Br* 2007;89:956-8.
6. Sulaiman SR, Alturk YM, Alarabi RM, Alsisi EM, Rajeh AA, Sulaimani AB. Uncommon presentation of bilateral subtrochanteric insufficiency fractures in young male associated with hypogonadism: A case report. *J Musculoskelet Surg Res* 2022;6:184-8.