



## Radiology Quiz

# Bloody blanket over the bone

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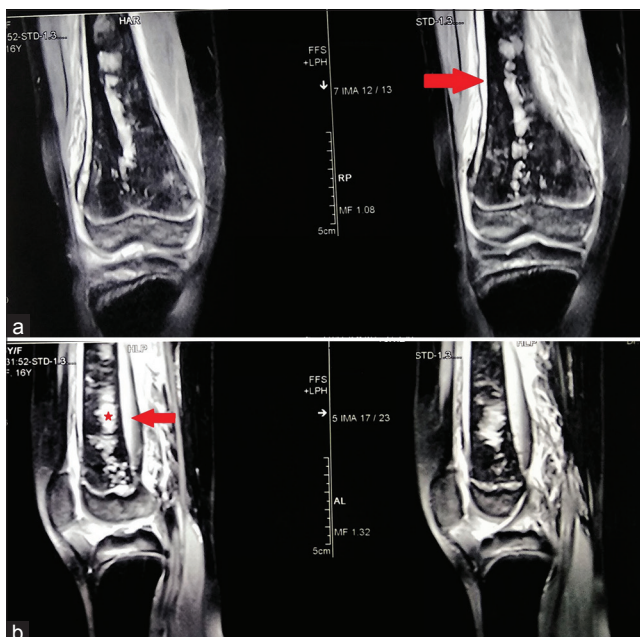
### Quick Response Code:



## HISTORY

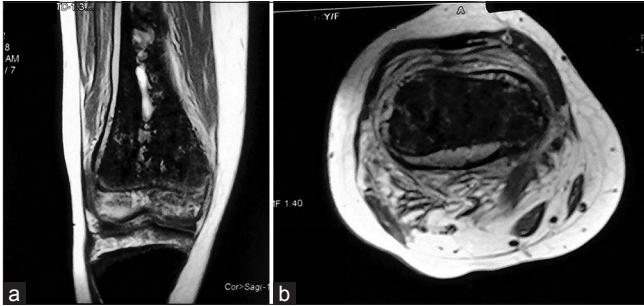
A 16-year-old girl presented with traumatic pain and swelling of the right thigh for 2 days, with pain medications providing transient relief. She had a history of transfusion-dependent hemophilia. Magnetic resonance imaging (MRI) of the affected extremity was done.

- What are the radiographic findings?
- What is the diagnosis?
- What are three common differential diagnoses?



**Figure 1:** The magnetic resonance imaging coronal images show the hyperintense collection in the subperiosteal region (red arrow) extending from the distal femoral physis to the proximal diaphysis (a). The collection is large and more pronounced (red arrow) posterior to the distal femur (b). There are areas of medullary infarcts (denoted by a red star) involving the meta-diaphyseal region.

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**Figure 2:** The magnetic resonance imaging coronal T1-weighted (a) and axial (b) images show hyperintense collection in the subperiosteal region and areas of increased intensity within medullary infarcts.

## FINDINGS

There is a hyperintense collection around the bone extending from the distal femoral physis and extending up to a large segment of diaphysis proximally [Figures 1 and 2]. The thickness of the collection surrounding the bone is more pronounced posteriorly [Figure 3]. Besides it, the distal meta-diaphyseal area of the femur shows discrete patches of intramedullary infarcts.

## DIAGNOSIS

Large sub-periosteal hemorrhage along with medullary bone infarct.

## DIFFERENTIAL DIAGNOSIS

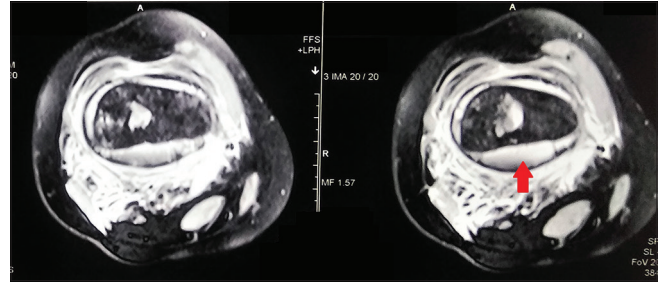
Important common differential diagnoses are as follows:

- Infection (acute osteomyelitis)
- Ewing sarcoma
- Bone infarct
- Lymphoma/blood cell tumors

## PEARLS AND DISCUSSION

Hemophilia is an inherited condition causing deficiency of clotting factors VIII or IX factor, causing hemophilia A and B, respectively (A more frequent than B). Serum concentration of factors determines mild, moderate, and severe types of the disorder. Hemorrhage from spontaneous or mild traumatic events is common and bleeding in osteoarticular tissues is also found.<sup>[1]</sup> Full-blown fractures or dislocations further complicate the problem and pose treatment challenges requiring various bleeding control strategies.<sup>[2]</sup>

Acute osteomyelitis is an important mimicker that should be ruled out with associated clinical features such as fever, raised temperature, or swollen extremities. The relevant blood tests such as increased leukocytes, neutrophils, and acute phase reactants like C-reactive protein and erythrocyte sedimentation rate can be helpful. Besides, subperiosteal collection (abscess) takes time to develop and is seldom seen so early in the course of the disease.



**Figure 3:** The magnetic resonance imaging axial fat-suppressed sections show the more posterior collection (red arrow) surrounding the bone.

Ewing's sarcoma may often mimic features of acute osteomyelitis clinically and radiologically. Both may have pain, fever, and elevated inflammatory markers. There is also the presence of cortical destruction and periosteal reaction in Ewing's sarcoma. Careful differentiation in MRI is required to differentiate between the two followed by biopsy confirmation.<sup>[3]</sup>

Bone infarction results from vascular supply compromise and local ischemia, leading to aseptic necrosis of bone. These are more commonly encountered in sickle-cell disease.<sup>[4]</sup> Medullary infarction features include variable medullary calcification and new bone formation at the corticomedullary junction. Bone infarct, however, in a few cases may complicate into osteomyelitis as medullary infarct may function as sequestra and, thus, predispose to further infection.<sup>[5]</sup> Various sorts of lymphomas are also reported and are rare differentials.

## AUTHORS' CONTRIBUTIONS

TP did the literature search and wrote the first draft while GSD collected the data. All authors have critically reviewed and approved the final draft and are responsible for the manuscript's content and similarity index.

## DECLARATION OF PATIENT CONSENT

The authors certify that they have 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 the identity, but anonymity cannot be guaranteed.

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## CONFLICTS OF INTEREST

There are no conflicting relationships or activities.

## USE OF ARTIFICIAL INTELLIGENCE (AI)- ASSISTED TECHNOLOGY FOR MANUSCRIPT PREPARATION

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

## REFERENCES

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