Figure 2. Hypertrophied right posterior sector

All authors disclose no conflict of interest. The study was conducted in accordance with the ethical standards of the relevant institutional or national ethics committee and the Helsinki Declaration of 1975, as revised in 2000.

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IMAGES IN SURGERY

Brodie Absces

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A 56 year old driver presented with upper shin pain for 10 months' duration. He has a history of compound fracture of tibia

- 1) What is the most likely diagnosis?
- 2) What are the differential diagnosis for the radiological appearance of above condition?
- 3) What are the other imaging modalities that will support your diagnosis?

Figure 1. AP and lateral view of upper end of left tibia / fibula

- 4) What are the management strategies that will help in treating the above condition?
- 5) What is the most likely culprit organism for the above condition?

Figure 2. CT appearance of left upper tibia

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Answers on page 30

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Key Points

- All neck masses should prompt detailed investigation with the clinical history in mind
- High index of suspicion should be maintained for diagnosis
- Treatment of such unusual cases needs multidisciplinary board discussions and often multimodality therapy hence should be referred to higher tertiary referral centers.

Answers for images in surgery (from page 21)

1) Brodie abscess (BA)

X-rays show a well demarcated area of destructed bone surrounded by a thick rim of reactive sclerosis in cancellous tissue near the end of upper tibia. With the history of compound fracture, osteomyelitis should be suspected.

Sir Benjamin Brodie first described subacute osteomyelitis in 1832 [5]. Ever since, sub-acute osteomyelitis of the bone in the form of pyogenic abscess were named after him as Brodie abscesses.

Most of the patients present with localized pain, often nocturnal, alleviated by simple analgesics [2, 3, 4]. It often mimics the symptoms of osteoid osteoma [7]. BA has a predilection to tubular bones like tibia, fibula, femur and radius. It particularly affects the metaphyses of these bones, most commonly the distal and proximal ends of tibia [1]. However it may rarely traverse the metaphysic of tubular bones into epiphyses and diaphysis. BA is a diagnostic challenge because in the acute phase the clinical features are minimal and non-specific. The initial infection is localized to a small area and is confined by a thick rim of inflammatory fibrous tissue forming an abscess causing bone destruction.

Due to its diagnostic challenges, various imaging modalities are used to confirm the diagnosis. In the plain radiograph it usually appears as an oval lytic lesion. It may show a finger-like radiolucent tortuous channel extending towards the epiphyseal plate, which, when present, is pathognomonic. If a sequestrum is present, it may mimick an osteoid osteoma.

2) The differential diagnosis for radiological appearance of Brodie abscess include

- I. Osteoid osteoma
- II. Non-ossifying fibroma
- III. Giant cell tumor
- IV. Eosinophilic granuloma
- V. Chondroblastoma
- VI. Fibrous dysplasia

3) Isotope bone scan-BA typically enhances on the delayed. CT- It demonstrates a central hypodense cystic lesion with a sclerotic margin due to an extensive fibrous periosteal reaction.

MRI- It is known that the characteristic “penumbra sign” on MRI aids differentiating BA from other bone lesions. It represents a highly vascularized thick rim of granulation tissue characteristically seen on T1 weighted images. Presence of this sign excludes the possibility of a tumor [7].

4) Biopsy and curettage – More than one third of cases are indistinguishable from primary malignant tumors of the bone due to their similar appearance in imaging studies. Histological studies are required for diagnosis in these cases [1]. After the diagnosis is confirmed, parenteral antibiotics according to the culture results/antibiotic sensitivity pattern should be initiated and continued up to 7 days followed by an average 6 week course of oral antibiotics.

Surgery is generally reserved for more aggressive cases of BA. Depending on the site and size of lesions, incision, drainage and curettage are performed. Lesions in diaphysis can be hard to deal with surgically [1]. Antibiotic laden bone grafts and antibiotic cement beads are examples of other forms of temporary surgical measures which can be considered [1].

5) *Staphylococcus aureus* is the most common organism cultured from Brodie abscesses [7].

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