SUBACUTE OSTEOMYELITIS SIMULATING BONE TUMOURS – A DIAGNOSTIC TRAP

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ABSTRACT

BACKGROUND

Subacute osteomyelitis is a type of osteomyelitis without any clinical signs and symptoms of osteomyelitis for more than 3 weeks’ duration with characteristic radiological features. It is a type of osteomyelitis without any obvious clinical signs and symptoms of osteomyelitis for more than 3 weeks’ duration with characteristic radiological features. The current trend of subacute osteomyelitis is due to increasing incidence as compared with AHO, less common type increase in frequency and cut-off between the infection and tumour is narrow. The aim of this article is to increase the awareness about increasing incidence of less common pattern of subacute osteomyelitis in our day-to-day practice which is often misdiagnosed as neoplasm and the vice versa.

The classification currently used is Roberts’ classification (modified Gledhill’s classification). It has six types including four basic forms of the disease occurring in the long bones and spine. The classification is given below.

<table>
<thead>
<tr>
<th>Type</th>
<th>Gledhill Classification</th>
<th>Roberts’ Classification</th>
<th>Differential Diagnosis</th>
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<tbody>
<tr>
<td>I</td>
<td>Solitary localised zone of radiolucency surrounded by reactive new bone formation</td>
<td>Ia—Punched-out metaphyseal radiolucency</td>
<td>Langerhans’ cell histiocytosis</td>
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<tr>
<td>II</td>
<td>Metaphyseal radiolucencies with cortical erosion</td>
<td>Ib—Punched-out radiolucent lesion with sclerotic margin</td>
<td>Brodie abscess</td>
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<tr>
<td>III</td>
<td>Cortical hyperostosis in diaphysis; no onion skinning</td>
<td>Localised diaphyseal cortical and periosteal reaction</td>
<td>Osteoid osteoma</td>
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<tr>
<td>IV</td>
<td>Subperiosteal new bone and onion skin layering</td>
<td>Diaphyseal lesion with Onion skin periosteal reaction</td>
<td>Ewing’s sarcoma</td>
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<tr>
<td>V</td>
<td>Central radiolucency in epiphysis</td>
<td>—</td>
<td>Chondroblastoma</td>
</tr>
<tr>
<td>VI</td>
<td>—</td>
<td>—</td>
<td>Lesion crossing the physis; Destructive process involving vertebral body</td>
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</table>

Most common type – Type – Ib (Brodie’s Abscess). But, we encounter Type – III & Type – IV More Often.

KEYWORDS

Subacute Osteomyelitis, Bone Tumour, Infection.


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MATERIALS AND METHODS
Totally 8 patients (5 male and 3 female) who admitted in our institute have been investigated. All patients underwent biopsy and curettage. Histopathological and microbiological examination was done. Antibiotic sensitivity of isolated organism was assessed.

Case 1
A 16-year-old male presented with pain and swelling over right proximal thigh, 1 month duration. Four weeks later, he developed extensive lytic lesion of proximal femur metaphysis with onion skin periosteal reaction in diaphysis in spite of intravenous antibiotics.

At the time of admission diagnosed clinically as Brodie’s abscess and subsequently revised to neoplasm and biopsy was performed.
MRI (at the time of admission) – Showed hypointense lytic lesion surrounded by hyperintense lesion in metaphyseal region? Ewing’s Sarcoma (as per the MRI report). CT (4 weeks later) showed metaphyseal mixed lytic and sclerotic lesion and onion skin diaphyseal periosteal reaction. He was approached laterally, biopsy and curettage was done. HPE showed Nonspecific osteomyelitis with chronic inflammation, Culture report showed pure growth of Staphylococcus aureus and sensitive antibiotic was started. X-rays were taken after 6 months.

Combined metaphyseal and diaphyseal subacute osteomyelitis is not described in Roberts’ classification. On review of literature, only one article reported this combined lesion (Harris et al).
Case 2
A 28-year-old female presented with pain over left hip and she had limping of one month duration. Clinically, she had no fever and no swelling. TC, DC, ESR and CRP were normal. X-ray showed lytic lesion in the neck of femur with sclerotic bone surrounding the lysis. CT report was probably osteoid osteoma of neck of femur.

Pre-op X-ray

CT Scan

CT Scan

Post-op X-ray

Through a lateral approach, lesion was curetted. Serous fluid came out. HPE showed Chronic inflammatory cells, Brodie’s abscess. Culture showed no growth.

Case 3
A 20-year-old female with complaints of swelling in Left leg, proximal third, of 6 months’ duration. She had no fever and occasional pain was present. TC, DC, ESR and CRP were normal. Pre-operative X-ray showed diaphyseal lytic lesion (Type V). MRI Report showed hypointense lesion with soft tissue oedema, possibility of Osteoid osteoma.

Clinical Photo
HPE Report

Pre-op X-ray AP View

Pre-op X-ray Lateral View

MRI Scan

Per-op Picture

Per-op Picture
Per-op finding are Infective granulation tissue and Dead bone was excised. HPE report showed chronic inflammation and the culture organism is Staphylococcus aureus. Sensitive antibiotic was started. On followup X-ray --- completely healed. No recurrence, no sinus.

Followup X-ray

Case 4
A 14-year-old boy presented with Left leg swelling, no pain and no signs of inflammation. X-ray showed diaphyseal cortical lytic lesion. MRI showed hypointense lesion surrounded by hyperintense lesion in coronal section. Sagittal section showed features suggestive of unicortical abscess in diaphyseal region. MRI report was Ewing’s sarcoma.
Lesion was explored for biopsy and serosanguinous pus & necrotic cortical bone was present which was sent for culture. Curettage of the lesion was done and sent for HPE. HPE report showed chronic inflammation and Culture showed Staphylococcus aureus.

Case 5
A 25-year-old male with complaints of swelling in the right leg of 6 weeks’ duration (on the lateral aspect of proximal third). Biopsy was done and it was a unicortical abscess. Organism was Staph aureus.
A 22-year-old male patient with complaints of left thigh swelling and pain of 1 month duration, no discharging sinus and no fever. X-ray showed extensive diaphyseal and metaphyseal periosteal reaction. Biopsy showed chronic nonspecific osteomyelitis and Culture showed Staph aureus.

Case 7
A 10-year-old boy presented with pain & swelling in proximal humerus of 3 months’ duration. He was referred from an orthopaedician from periphery as Ewing’s sarcoma. Except for elevated ESR & CRP, others were normal. Biopsy was favourable for osteomyelitis, Culture was Staph aureus.
Antibiotics and reassurance were given. Swelling reduced in size after a course of antibiotics.

**Case 8**
A 19-year-old female presented with pain over left hip for 1 year duration. Blood investigations were within normal limits except elevated ESR and CRP. X-ray showed extensive periosteal reaction in mid-1/3rd of left femur, nidus is not clearly seen. Initial differential diagnosis was osteoid osteoma and subacute osteomyelitis.

Biopsy report showed chronic nonspecific osteomyelitis and Culture and Sensitivity showed Staph aureus sensitive to cefoperazone. Final diagnosis was unicortical abscess, left femur.
RESULTS
In all eight patients, osteomyelitis was confirmed with biopsy and culture sensitivity. HPE showed six cases of non-specific osteomyelitis. Culture report showed *Staphylococcus aureus* was isolated in six patients. Two patients showed no growth. Antibiotic sensitivity was mostly sensitive to Cefoperazone, sulbactam, Ceftriaxone, Cloxacillin, Amikacin, Linezolid. They were treated with curettage and 2 weeks of sensitive parenteral antibiotics followed by 4 weeks of oral antibiotics. They were completely cured without any recurrence or any other complications except for one patient who had segmental osteonecrosis of head of femur due to the location of Brodie’s abscess at the neck of femur. Combined metaphyseal and diaphyseal subacute osteomyelitis are not described in Roberts’ classification. Among the eight patients, two patients were in this category and not fitted under Roberts’ classification.\[1\]

DISCUSSION
Incidence of subacute osteomyelitis is increasing nowadays compared with that of the acute form. Subacute osteomyelitis develops when there is an altered host-pathogen relationship as a result of increased host resistance and decreased bacterial virulence. The acute process may also be masked by antibiotics administered early in the clinical course. Apart from raised ESR, other data does not support a diagnosis of osteomyelitis\[3\] and the radiological presentation may be suggestive of a benign or malignant bone tumour.\[4,2,5\]. Subacute osteomyelitis radiological presentations do not always fit into the proposed classification system.\[1\] *Staphylococcus aureus* is the causative organism by most authors.

CONCLUSION
Differentiation of subacute osteomyelitis and bone tumour is very difficult even with modern investigation. To overcome this diagnostic challenge, histopathological examination (biopsy) and culture is mandatory to confirm the diagnosis and for the treatment and prognosis aspect. For any infection a biopsy and for any tumour culture and sensitivity should be done.
REFERENCES


