Abstract: We are reporting the rare presentation of unicortical abscess in two patients. Two patients with insidious onset of swelling in the leg with minimal pain were evaluated with blood investigations, radiographs, CT scan and MR Imaging. Excision biopsy was done. The specimen was sent for Histopathological examination. The Histopathological examination showed evidence of necrotic bone with inflammatory cells. The patients showed symptomatic relief and the follow up period is uneventful. Unicortical abscess is a rare presentation and the diagnosis have to be made, keeping in mind all the differential diagnosis and ruling out them.

Keyword: Unicortical Abscess, Osteomyelitis, subacute, periosteal reaction, sequestrum

INTRODUCTION:
Unicortical abscess is a rare presentation of infection of bone. It occurs in the common age group between 10-20 years. It is rare and less common than chronic central bone abscess. The patient presents with pain and swelling with absence of local signs of inflammation. It is usually diagnosed by excluding the differential diagnosis of intracortical bone pathology and based on clinical & radiological presentation and histopathological examination.

CASE REPORTS:
CASE 1: A 25 year old man admitted with complaints of pain and swelling in the right leg for the past 6 weeks. Pain is of dull-aching, continuous in nature, aggravated by walking and partially relieved with analgesics and rest. His general and systemic examination was normal and on local examination, a diffuse swelling on the lateral aspect of right leg over the mid third of fibula with tenderness over the swelling was present. The range of movements of the joint above and below was pain free and there was no neurovascular deficit. His investigations revealed elevated Erythrocyte sedimentation rate. Elisa for HIV was done which was found to be
Non reactive. The radiographs showed unicortical bone destruction in the shaft of proximal third of fibula. (Fig 1)

Fig 1

The Computed tomography images (Fig 2) and MR images (Fig 3) showed the unicortical lesion of the fibula on more medial aspect with an intracortical sequestrum. The patient was planned for excision biopsy of the unicortical lesion and the section of the fibula containing the diseased bone is excised out (Fig 4 & 5). Macroscopically single cortical involvement was only identified. The specimen was sent for Histopathological examination.

Fig 2 Fig 3

Fig 4
The patient was then placed in above knee plaster slab for immobilization for 2 weeks for reducing pain and then mobilised. The Histopathological examination showed osteomyelitis with inflammatory cells(Fig 6). The patient was treated with 3 weeks of parenteral antibiotics and followed by 3 weeks of oral antibiotics. The patient had symptomatic relief and the Erythrocyte Sedimentation rate returned normal. The follow up period was uneventful.

CASE 2: 15 year old boy admitted with complains of swelling in mid-third of left leg for past 2 years which was insidious in onset and slowly progressed to the present size. It was associated with dull aching pain which was aggravated by walking and relieved by rest and analgesics. The general and the systemic examinations of the patient were normal. The local examination revealed oval swelling of about 8 X 6 cm present in mid-third of tibia. The skin over the swelling was hyper pigmented. There was no scar or sinus. The swelling was not warm but tender on palpation. On investigating the patient's erythrocyte sedimentation rate was increased. VDRL and Mantoux test were negative. ELISA for HIV was found to be Non Reactive. Plain radiograph (Fig 7) of the left leg showed unicortical involvement of tibia in the mid third with normal medullary cavity. MRI (Fig 8 & 9) was done which showed a lytic lesion with surrounding sclerosis in the anterior cortex of tibia.

The patient was planned for curettage of the unicortical lesion of tibia. Intra operatively the pus present under the periosteum was drained out, the surrounding unhealthy abscess wall and periosteum was excised. The piece of sequestrum which was present subperiosteally was removed and the underlying unhealthy layer of cortex was curetted upto the normal cortex. The specimen was sent for histopathological examination.

Post operatively he was put on above knee slab for immobilization (Fig 10). The postoperative period was uneventful. Wound healed well. The histopathological examination revealed as necrotic tissues with surrounding inflammatory cells (Fig 11). The pus was sent for culture and sensitivity which showed the growth of Staphylococcus aureus which was sensitive to Piperacillin tazobactam and Linezolid.
The patient was treated with appropriate parenteral antibiotics for 3 weeks followed by 3 weeks of oral antibiotics. The follow up period showed improvement in symptoms and the Erythrocyte sedimentation rate returned to normal.

RESULTS:
Both the patients were completely relieved of the symptoms after surgery and antibiotic treatment. There was no recurrence or any other complications. The patients were able to continue their normal activities. The diagnosis was confirmed in both the patients with the histopathological examination which confirmed the presence of infection in both the cases.

DISCUSSION:
Infections of the bone may be broadly classified as acute osteomyelitis, Sub acute osteomyelitis or chronic osteomyelitis. The incidence of combined cases of acute and sub acute osteomyelitis ranges from 7% to 42%. The indolent course of subacute osteomyelitis is thought to be the result of increased host resistance, decreased bacterial virulence, or the administration of antibiotics before the onset of symptoms.

The Natural course of the unicortical abscess starts as a sub-periosteal focus of infection and then the toxins are produced and diffuse through the immediate neighborhood and cause the periosteal reaction. The periosteal reaction will appear due to irritation above and below the focus.

In the initial first 2 months the radiographs show only linear accretion of new periosteal bone which is thickest at the focus of irritation. After 3-4 months the periosteal new bone become denser and become a spindle shaped expansion merge with the normal shaft. There is no line of demarcation between the normal and abnormal bone.

The treatment is localized resection of the cortex including the irritant focus present beneath the dense cortex. The differential diagnosis like intracortical type of osteosarcoma, osteoid osteoma, and Osteoblastoma, have to be considered.

The clinical and radiological features of the patients were not supporting the picture of acute osteomyelitis. This condition closely resembles Roberts et al Type III sub acute osteomyelitis in which localized lucent lesions in the cortex of the diaphysis, with a periosteal reaction that may resemble osteoid osteoma will be present. But the differentiating point is that, apart from cortical erosion and periosteal reaction, sub-acute osteomyelitis will have marrow edema and sclerosis in Plain x-ray and MRI that favors myelitis.

In our patients
there was no features in MRI suggestive of myelitis and hence the rarity.
As with other forms of osteomyelitis the most common pathogen Staphylococcus aureus has been the cause in our patients too.

CONCLUSION:
Unicortical abscess of bone, the incidence of which is not exactly known, is a rare presentation of infection of bone. Unicortical abscess has an indolent course, absence of local inflammatory signs, and the involvement of single cortex of bone. Unicortical abscess when diagnosed and treated appropriately gives an excellent prognosis. In our study, both the patients responded well to the complete excision of the infective focus followed by the parenteral antibiotic treatment. After an extensive literature review we could find only limited references for this rare presentation. The diagnosis is usually confirmed by the Histopathological examination which ruled out the presence of tumours. In clinico-radiological diagnosis of intracortical type of osteosarcoma, osteoid osteoma and osteoblastoma, the diagnosis of unicortical abscess should always be considered as differential diagnosis.

REFERENCES:
1. James F. Brailsford, M.D., Ph.D., F.R.C.P. Chronic Sub-periosteal Abscess. JBJS 1942 November; Vol XV : 313-317
4. Edmund Horgan. Chronic cortical abscess of the ulna caused by the Bacillus typhosus. JBJS Case Connector 1931; 13:570-573