



Brodie's Abscess – Not just a disease of the young

¹ Dr. Channappa TS, ² Dr. Shivakumar HB, ³ Dr. Manju Jayaram, ⁴ Dr. Yatish R,
⁵ Dr. Somshekhar Chatterjee

^{1,2} Professor, ^{3,4} Associate Professor, ⁵ Junior Resident

Department of Orthopaedics, Kempegowda Institute of medical sciences and Research center

***Corresponding Author:**

Dr. Channappa TS

Department of Orthopaedics, Kempegowda Institute of medical sciences and Research center

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Abstract

Introduction: Brodie's abscess is a form of sub acute osteomyelitis which typically presents in young children or in adolescents. The symptoms are quite often mild due to the low virulence or the higher resistance of the patient and blood workup like WBC count is often found to be within normal limits. The causative organism is usually Staph aureus. Here is a case report of an uncommon presentation of brodie's abscess in a middle aged male patient without any history suggestive of immunocompromised status with extra osseous seropurulent fluid accumulation

Case Presentation: A 40 year old male patient presented with the c/o pain and swelling affecting the right foot and ankle causing restriction of movements to the orthopaedic OPD at KIMSH, Bangalore. After blood workup and radiological evaluation, the diagnosis remained uncertain and surgical curettage and lavage was done with concurrent histopathological and pus culture and sensitivity evaluation was done after which a diagnosis of Brodie's Abscess was arrived at. A Brodie's Abscess is a form of sub acute osteomyelitis generally affecting children and adolescents and the distal tibial presentation in a middle aged male patient without any immunocompromise is a rare case presentation. The patient was treated surgically with lavage and vancomycin infused STIMULAN beads were left in situ and he was followed up on an opd basis. Patient made a full recovery and was able to return to all daily routine activities with no long term sequelae

Conclusion: Brodie's abscess may present in middle aged patients, here prompt surgical treatment with a combined local and systemic antibiotic regimen allowed quick recovery and return to work for the patient. This treatment was well tolerated by the patient and showed good compliance and good result.

Keywords: Brodie's abscess, rare presentation, infection, unusual age, unusual location

Introduction:

Brodie's abscess is a subacute form of hematogenous osteomyelitis, which results if an organism is less virulent or a child's resistance is strong. The patient is usually a child or adolescent who has had pain near one of the larger joints for several weeks or even months¹. Brodie's abscess is difficult to diagnose because characteristic signs and symptoms of the acute form of the disease are minimal and non-specific. Occasionally it appears in the epiphysis and, in adults, in one of the vertebral bodies¹.

Materials And Methods:

Patient presented with the c/o pain and swelling in the right ankle to the out patient department of Department of Orthopedics, KIMSH. The patient underwent a general evaluation at first and subsequently a diagnosis was arrived at, following which specific radiological and histopathological evaluation was done and the patient was managed accordingly

Case Report:

A 40 year old male patient presented with the c/o pain and swelling of the right ankle and foot for the past 10 days

The pain was sudden in onset, gradually progressive, initially moderate then severe. Pain was confined to the foot and the ankle. Aggravated on walking and partially relieved by rest. Patient also has c/o diffuse swelling of the right foot and ankle. Swelling was sudden in onset and gradually progressive in nature. Increased on walking and partially relieved by limb elevation. Patient initially went to a nearby private clinic where analgesics were prescribed. However the patient's complaints were not relieved and he subsequently came to KIMSH, Bangalore.

On examination, patient is a moderately built and nourished middle aged male

Head to toe examination revealed no evidence of pallour, icterus, cyanosis, clubbing, generalized lymphadenopathy or bilateral pitting pedal edema. With the patient in supine position, B/L ASIS were found to be at the same level, B/L hip found to be in neutral, B/L knee in neutral and at same level. Right foot and ankle appears to be in plantar flexion. There is diffuse swelling around the right foot and ankle, skin appears to be stretched and shiny. There is local rise of temperature with diffuse tenderness around the right ankle

Movements at the right ankle were restricted, painful and associated with spasm. B/L distal pulses were well felt and equal. Routine blood work up was done with a complete hemogram, RFT, serum electrolytes, urine routine and serology. X rays of the limb were also taken. Total count was 11100 and ESR was 64. Doppler study of the limb revealed no evidence of DVT/thrombophelbitis. A provisional diagnosis of ?tubercular abscess was suspected and in view of this an MRI was done. MRI features were suggestive of an interosseus Brodie's Abscess with extraosseus extensions and associated tendosynovitis. The patient was initially being treated conservatively with IV antibiotics and analgesics. He was subsequently worked up for OT and Decompression, Lavage and Stimulus Administration was done

Large amounts of sutaneous and intraosseus fluid collection was noted. Thorough lavage was done and vancomycin embedded stimulant beads were placed. The pus was sent for microbiological examination

which showed the causative agent to be Staph aureus and IV antibiotics were given according to sensitivity. Patient's limb was immobilized in a cast and a window was created to facilitate regular dressings. The wound healed uneventfully and sutures were removed after 14 days. The cast was removed after 6 weeks and parital weight bearing was started. Full weight bearing was started at 3 months and the patient was able to return to his daily activities

Discussion:

Brodie's abscess is localized form of osteomyelitis, is usually found in the cancellous tissue near the end of the long bone. Typically there is a well-defined cavity in cancellous bone – usually in the tibial metaphysis – containing seropurulent fluid and rarely pus. The cavity is lined by granulation tissue containing a mixture of acute and chronic inflammatory cells. The surrounding bone trabeculae are often thickened. The lesion sometimes encroaches on and erodes the bony cortex. The WBC count and blood cultures usually show no abnormality but the ESR is sometimes elevated.

The typical radiographic lesion is a circumscribed, round or oval radiolucent 'cavity' 1–2 cm in diameter. Most often it is seen in the tibial or femoral metaphysis. Sometimes the 'cavity' is surrounded by a halo of sclerosis; occasionally it is less well defined, extending into the diaphysis. Metaphyseal lesions cause little or no periosteal reaction; diaphyseal lesions may be associated with periosteal new bone formation and marked cortical thickening¹.

The clinical and x-ray appearances may resemble those of cystic tuberculosis, eosinophilic granuloma or osteoid osteoma; occasionally they mimic a malignant bone tumour like Ewing's sarcoma. Epiphyseal lesions are easily mistaken for chondroblastoma¹. The diagnosis often remains in doubt until a biopsy is performed.

If fluid is encountered, it should be sent for bacteriological culture; this is positive in about half the cases and the organism is almost always *Staphylococcus aureus*. *Staphylococcus aureus* is the causative organism in 30–60% of cases. Other organisms encountered are *Streptococcus*, *Pseudomonas*, *Haemophilus influenzae* and *Kingella kingae*^{2,5}. Though the primary site is often not

identified, Brodie's abscess is thought to be a secondary bone infection related to hematogenous spread. Treatment may be conservative if the diagnosis is not in doubt. Immobilization and antibiotics intravenously for 4 or 5 days and then orally for another 6 weeks usually result in healing. If the diagnosis is in doubt, an open biopsy is needed and the lesion may be curetted at the same time. Curettage is also indicated if the x-ray shows that there is no healing after conservative treatment. This is always followed by a further course of antibiotics. Surgical debridement and antibiotic coverage are the definitive treatments^{3,4}.

Conclusion:

Early surgical intervention shows a good result, reducing overall morbidity and improving patient compliance. Our case showed good results with surgical management and allowed the patient to return to daily activities after a brief period of rehabilitation

The use of local antibiotics via stimulus allowed the patient to be weaned off IV antibiotics faster than a typical case of osteomyelitis

Overall patient compliance was good and tolerated the treatment well

Clinical Message:

Brodie's abscess is typically seen in younger children or adolescents however there may be unusual presentation. While evaluating patients with vague complaints such as pain and swelling and these cases it is important to remember that these unusual presentations of sub acute osteomyelitis and brodie's abscess may present in middle aged non

immunocompromised patients. The diagnosis in these cases should not be missed and prompt treatment results in a good outcome for the patient.

Consent:

The patient has given his full and valid consent for the case study to be done and for the case report to be published after explanation to him in his own understandable language

References:

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Figures:



Fig 1 - Pre op swelling noted at the ankle Fig 2 - Pre Operative X Ray

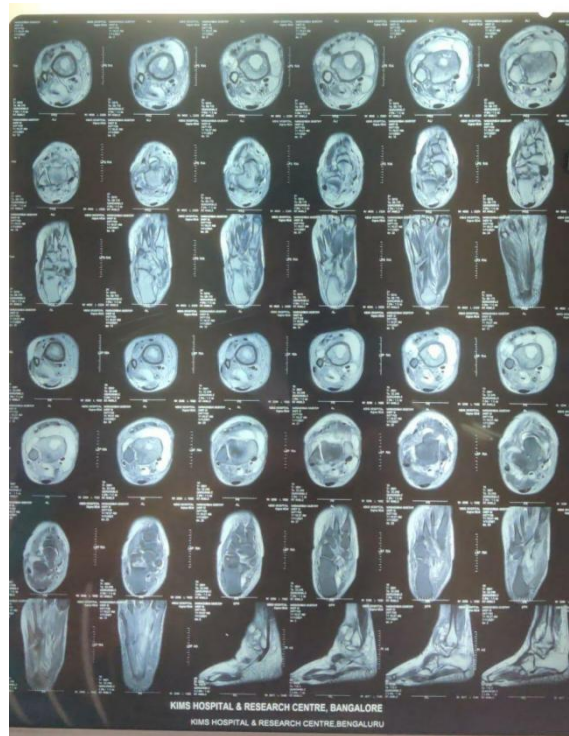
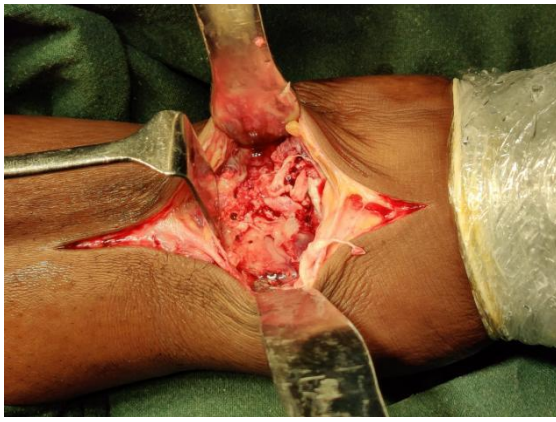
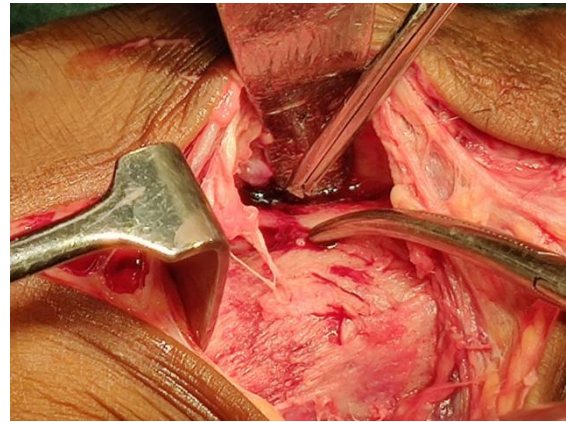


Fig 3 - Pre Operative MRI Evaluation



A



B



C



D

Fig 4 - Intra Operative Pictures, A – Extra osseous seropurulent collection, B – Bone defect identified , D – Window made, C – Intraosseous seropurulent fluid collection, D – Antibiotic loaded STIMULAN beads placed



Fig 5 -Post Op X Ray

Test Name	Test Result
AEROBIC CULTURE	
SPECIMEN	Swab
CULTURE REPORT	Reported on 19.01.2021 (Received on 17.01.2021)
ORGANISMS ISOLATED	Staphylococcus aureus grown (Moderate growth).
ANTIBIOTIC SUSCEPTIBILITY BY AUTOMATED TURBIDIMETRIC METHOD	
CIPROFLOXACIN (CIP)	SENSITIVE (<=0.5)
CO-TRIMOXAZOLE	SENSITIVE (<=10.0)
CLINDAMYCIN (CLM)	SENSITIVE (0.25)
CEFOXITIN	NEGATIVE
ERYTHROMYCIN (E)	SENSITIVE (<=0.25)
GENTAMYCIN (G)	SENSITIVE (<=0.5)
LEVOFLOXACIN	SENSITIVE (0.25)
LINEZOLID	SENSITIVE (2.0)
PENICILLIN (P)	SENSITIVE (0.12)
VANCOMYCIN	SENSITIVE (1.0)
INDUCIBLE CLINDAMYCIN RESISTANCE	NEGATIVE
TETRACYCLINE	SENSITIVE (<=1.0)

Fig 6 - Culture and sensitivity report of pus sent intraoperatively



Fig 7 - Follow Up X Ray showing union of created window and absorbtion of STIMULAN