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Chronic Osteomyelitis of Ilium in a Female Health Care Worker – A Case Report

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Abstract **Case Report**

Introduction: Osteomyelitis is the infection of bone that is characterized by progressive inflammatory destruction with appositioning of new bone. Pelvic osteomyelitis is often an unusual condition but accounts for approximately 1% to 11% cases of haematogenous osteomyelitis (2). The most common location is the ilium due its larger size and abundant blood supply and hematopoetic marrow. The average age of onset tends to be between 7 and 14 years, with a slight male preponderance (2). Mechanism of spread of iliac osteomyelitis can be hematogenous, contiguous or direct inoculation due surgical contamination or open fractures. ***Case report***: Here is a 21 year old female health care worker student presented with pain in right Iliac region and difficulty in walking and inability to bear weight since last 18 months. She is a case of Chronic Osteomyelitis where Debridement was performed previously and now Patient also had recurred complaints of on and off Discharge from the site of previous Operated scar site. Patient was operated for Right Iliac Debridement and saucerization. Patient was mobilized and there was relief of symptoms. ***Conclusion***: As is clear by our case here, osteomyelitis can recur even after the conservative Antibiotic and conventional chemotherapeutic regimen for TB along with surgical management. Surgical management of debridement and Saucerization gives better outcomes to perform activities of daily living, and also to decrease the disease load so as to provide symptomatic relief to the patient and helps in recovery. Surgical management acts as an adjuvant to the chemotherapy which obviously remains the mainstay of treatment in reducing the acute symptoms of the patient thus improving the quality of life.

Keywords: Osteomyelitis, Ilium, Debridement, Saucerization.

INTRODUCTION

Osteomyelitis is the infection of bone that is characterized by progressive inflammatory destruction with appositioning of new bone. Pelvic osteomyelitis is often an unusual condition but accounts for approximately 1% to 11% cases of haematogenous osteomyelitis [1, 2]. Osteomyelitis of the pelvis is often an arduous condition to diagnose due to numerous presentations. The ilium is the bone most frequently affected in this region due to abundant blood supply and hematopoetic marrow. Mechanism of spread can be hematogenous, contiguous or direct inoculation due surgical contamination or open fractures. Risk factors include recent trauma, immunocompromised status and poor blood supply along with conditions like diabetes mellitus or Sickle cell Anemia.

Diagnosis requires careful assessment of radiographs, CT and MRI and determining the organism via culture or biopsies. Treatment of Chronic Osteomyelitis is a combination of culture sensitive antibiotics and surgical debridement of dead and non-viable tissues

CASE REPORT

Here is a 21 year old female student presented with dull aching pain in right Iliac region and difficulty in walking for the last 18 months. There was no history of radiation of pain. Patient has a history of Typhoid for 3 consecutive years in the following years of 2011, 2012 and 2013 for which hospital admission was required. Patient was also operated for right ulna osteomyelitis for which debridement was done in 2014.

Similar complaints were experienced by the patient in 2016 where there was discharge from the Right Iliac region for which sinus tract excision was done. Patient had recurrent complaints of discharge next year for which she was operated where debridement and closure was done. In 2019 patient had complaints of discharge from the same tract for which empirical AKT was started on 26/9/2019 to 14/11/2020. On clinical examination the patient was anaemic and was having an antalgic gait. Patient also had no recent history of fever and loss of appetite. On local examination she had mild erythema along with local warmth along a scar of 5cm with an ill defined partialy healed discharging sinus (fig. 1). Preoperative X rays and CT scans show lytic lesion in right ilium (fig. 2).

Patient complaints of on and off discharging sinus with pain while walking for which Debridement and saucerization was done (fig. 3). Intraoperative samples were sent for Pus culture sensitivity where the reports suggested no isolation of organisms. Gene Xpert of the Tissue showed no evidence of MTB. Histopathology showed chronic nonspecific inflammation. Patient was on IV Antibiotics (3rd generation cephalosporin) for 3 weeks. There was a sequential decrease in ESR and CRP levels post operatively with improvement in the general condition of the patient.

Immediate postoperative X rays and CT scans how well saucerized region in right ilium (fig. 4 and 5). Post-operative mobilization and rehabilitation was initiated with education regarding postion changes were taught. Suture removal was done after the 3rd week and sutures were healthy with no discharge. At 8 weeks postoperative, the suture site was healed completely with good functional outcome (Fig. 6).

Surgical technique

The aim of the surgical approach of iliac osteomyelitis are to achieve thorough resection of all necrotic and infected tissue and also to obtain a deep tissue samples for microbiological diagnosis as well to to eliminate the dead space as much as possible and to provide well-perfused tissue cover of the pelvic bones. Patient is taken on operating table in supine position. Induced under all aseptic precautions and under epidural plus spinal anaesthesia. Patient is positioned in a lateral decubitus position. Proper Scrubbing and Painting of the operative parts are done.The anterior superior iliac spine being subcutaneous is quite easily palpated in thin individuals. In obese patients, it is covered by adipose tissue and is quite difficult to find. One can locate it most easily if you bring your thumbs up from beneath the bony protuberance. The iliac crest is a point of origin and insertion for various gluteal muscles. However,it remains available for palpation as none of these muscles cross the bony crest. An extensive approach of 8-10 cm incision parallel to the iliac crest and centered over the iliac tubercle. Muscles either take origin from or insert onto the iliac crest, but do not cross it. Hence, the iliac crest offers a truly internervous plane. The tensor fasciae latae, gluteus minimus, and gluteus medius are the muscles affected because they originate from the outer portion of the ilium and are supplied by the superior gluteal nerve. The abdominal muscles take their origin directly from the iliac crest and are supplied segments. Meticulous dissection is of utmost necessity because if the dissection is not planar the closure will not be ideal that is required for healing of the tissues. All the infected soft tissue excised. Radical debridement and saucerization of all necrotic bone was done using a bone gouge, osteotome and hammer followed by removal of surrounding sclerosed bone so as to remove all the necrotic foci of infection and avoid any future recurrence of infection (figure 3).Sinus tract was traced with infant feeding tube and excised. Intra operative samples were collected and were sent for Histopathology and Tissue culture sensitivity.

Fig-1: Preoperative clinical picture showing discharging sinus with preoperative X rays and CT scans

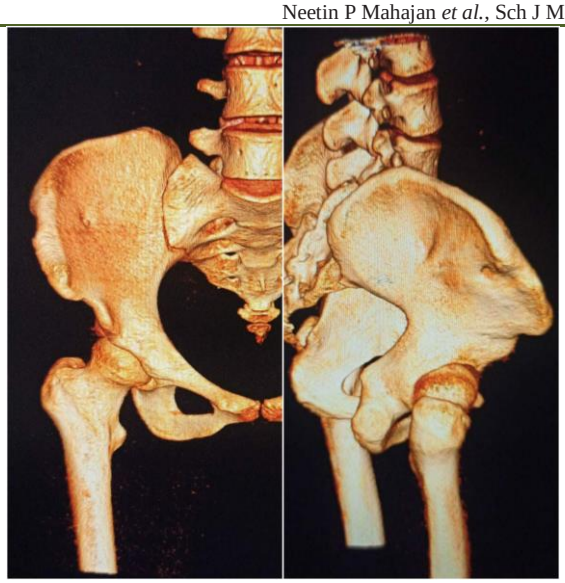

Fig-2: Preoperative 3D CT cuts showing lesion in right ilium

Fig-3: Intraoperative clinical pictures showing thorough debridement and saucerization of the lesion in right ilium with excision of sinus tract using infant feeding tube

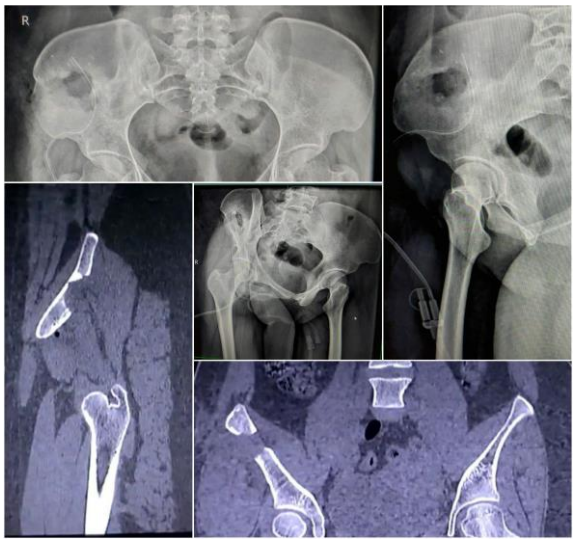

Fig-4: Postoperative X rays and CT cuts showing saucerized area in right ilium

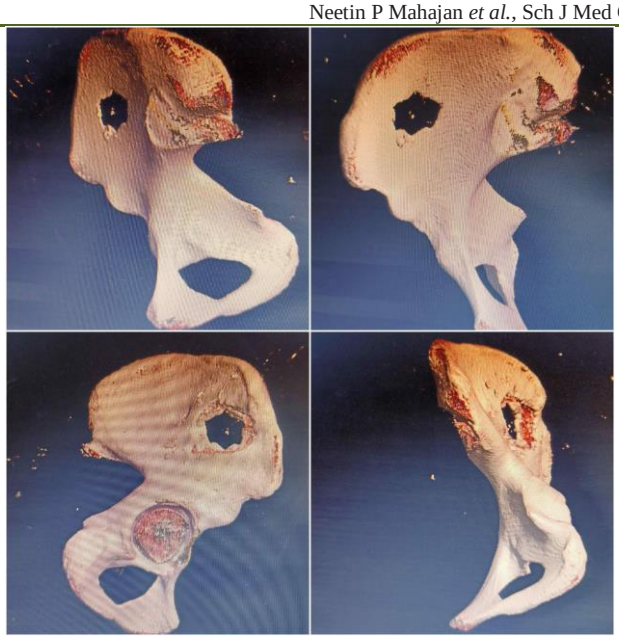

Fig-5: Postoperative 3D CT cuts showing saucerized area in right ilium

Fig-6: 8 weeks postoperative X rays and clinical picture of healed suture site

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

DISCUSSION

Chronic osteomyelitis is often a debilitating condition which may require prolonged periods of multidisciplinary treatment for the control of the symptoms. Mechanism of spread of chronic osteomyelitis can be hematogenous, contiguous or direct inoculation. In the presence of non-viable bone, infection cannot be successfully eradicated with antibiotics alone due to pathobiogenic organism's ability to form a biofilm. Biofilm is characterized by the bacteria entering into a sessile phase which makes them more resistant to antibiotics that depend on the replication to carry out the effect. Bacteria with an altered phenotype , in this glycocalyx matrix become tolerant of antimicrobials and relatively resistant to attack by the host immune system along with lesser penetration of antibiotics due to the biofilm[1].

The most frequent causative organism is staphylococcus aureus, present in 38% to 46% of cases, but other organisms include streptococcus pneumoniae, pseudomonas, E. coli, salmonella, and other gram negative bacilli and mycobacterium species. Clinical features associated with pelvic osteomyelitis include chronic dull aching hip or thigh pain, present in 96% of

cases, fever can be a presentation in 57% along with altered weight bearing in 46% [2].

On examination there is often tenderness on palpation of the sacro-iliac joint with decreased straight leg rising and a positive pelvic compression test. Active movements of the hip joint like Flexion may occur as a result of serial irritation of the iliopsoas muscle due to abscess formation. Passive movement of the hip joint is usually preserved, with pain experienced only during the extreme range of motion. Also look for any previous scar or operative marks in and around the affected area for any previous surgical history [2]. Right iliac fossa tenderness can also be a secondary presentation in view of the inner cortex involvement of the pelvis. Blood tests typically show raised inflammatory markers, with an elevated ESR present in 90% of cases and a raised white cell count in 59% to 66% of cases. Tissue and Blood cultures are positive in only 50% to 78% of cases though negative cultures do not exclude infection [2].

There have been cases of abdominal infections due to perforated appendicitis [3] or due to celiac conditions like Crohn's disease giving rise to iliac osteomyelitis in the literature [4]. Patient presented here is having history of consecutive typhoid for 3 years but culture report was not suggestive for the same.

Radiographs of chronic pelvic osteomyelitis can have a presentation of diffuse moth-eaten radiolucent lesion with periosteal reaction and sequestrum formation. Cierny-Mader staging system is used for staging of chronic osteomyelitis. CT can be an important tool to look out for cortical breach and to determine the extent of the lesion. MRI, especially T2 sequences will show bone and soft tissue edema and the best test in diagnosing osteomyelitis at an early stage. Technetium 99 bone scan is an excellent method with high sensitivity in an early diagnosis because the pelvis has an excellent blood supply [5]. Culture specific IV antibiotics for 3-12 weeks should be the initial management which if met with failure of resolution of the symptoms and then without a doubt surgical management with curettage or en bloc excision of the non-viable soft tissues and sinus tract with removal of all the dead and necrotic foci is the treatment of choice. Complications that can happen post operatively are persistence or even extension of infection, sepsis or rarely malignant transformation in the form of Marjolin's ulcer [6].

Chronic recurrent multifocal osteomyelitis (CRMO) is a disease mainly affecting children or adolescents, and characterized by inflammatory, often multifocal, osseous lesions without a detectable causative organism [7]. It is characterized by bone pain and fever, a course of exacerbations and remissions, and a frequent association with other inflammatory conditions.

It is assosiated with conditions like Pustulosis palmoplantaris syndrome and SAPHO Syndrome (synovitis, acne, pustulosis, hypersotosis, osteitis)[8].

CONCLUSION

As is clear by our case here, osteomyelitis can recur even after the conservative Antibiotic and conventional chemotherapeutic regimen for TB along with surgical management. In a patient of chronic osteomyelitis having recurrence aggressive debridement and removal of all necrotic bone is necessary and gives better outcome to perform activities of daily living, and also to decrease the disease load so as to provide symptomatic relief to the patient and helps in rehabilitation. Rather than being in a dilemma of repetitive chemotherapeutic therapy a radical surgical debridement has been a better line of management.

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