MANAGEMENT OF PATHOLOGICAL FRACTURE SHAFT HUMERUS SECONDARY TO BACTERIAL OSTEOMYELITIS: A CASE REPORT

DR. NARENDRA SINGH KUSHWAHA*
DR. SHAH WALIULLAH**
DR. VINEET KUMAR***
DR. VINEET SHARMA****

*Asst. Professor, Dept. of Orthopaedic Surgery, King George Medical University, Lucknow, India
**Asst. Professor, Dept. of Orthopaedic Surgery, King George Medical University, Lucknow, India
***Asst. Professor, Dept. of Orthopaedic Surgery, King George Medical University, Lucknow, India
****Professor & Head, Dept. Of Orthopaedic Surgery, King George Medical University, Lucknow, India

ABSTRACT

Union after application of external fixation has been described in children but it is rare in adults and even rarer in pathological fractures. We are presenting a case of pathological fracture shaft humerus in a young adult caused by septic osteomyelitis managed by limb realignment system (Orthofix). A 27 year old male, presented to us with complain of pain and swelling over left arm. On examination there was diffuse swelling over left arm along with a discharging sinus over medial aspect of mid arm. On X-rays, there was pathological fracture of mid shaft humerus. Patient was managed open biopsy of the lesion, debridement of sinus tract and external fixation of pathological fracture by limb realignment system (Orthofix). Biopsy sample confirmed growth of gram positive bacilli (staphylococcus aureus). Antibiotics were continued for six weeks as per culture reports. Patient was followed clinically, radiologically and haematologically. At three months follow up, fracture showed signs of healing clinically and radiologically. At five months follow up proper union at the fracture site was documented. At six months Orthofix was removed. We reported this case because of its presentation and healing observed in pathological fracture managed with limb realignment system (Orthofix).

KEYWORDS: Pathological fracture, Bacterial osteomyelitis, Limb Realignment System (Orthofix)

INTRODUCTION

Infection of bone is one of the biggest enemy of orthopaedic surgeons and management of pathological fracture secondary to infection is a daunting task for orthopaedicians due to the problem of infection as well as osteoporotic bone. Osteomyelitis is defined as an inflammation of bone and medullary cavity which is caused by infective micro-organism. It may be haematogenous, contiguous adjacent to infection nidus or by direct
inoculation of bacteria secondary to trauma. Haematogenous osteomyelitis is commonly seen in paediatric age group and rare in adults except in immuno-deficient state (1). We are presenting this case of haematogenous osteomyelitis in immuno-competent adult presenting with pathological fracture shaft humerus.

Case Report:

A 27 year old male, presented to us in outpatient department with complain of pain and swelling over left arm. Pain was insidious in onset, off and on, associated with high grade fever since one and half month. Patient reported that there was a sudden increase in pain intensity since last five days with appearance of active discharging sinus over medial aspect of left mid arm. There is no history of trauma. Patient initially for his complains, took treatment from a local physician in the form of analgesics and oral antibiotics. Pain and fever were relieved temporarily. On examination left arm was tender and warm to touch (raised local temperature) in addition to diffuse swelling over left arm along with a discharging sinus at medial aspect of mid arm. There was abnormal mobility in both sagittal and coronal plane. On X-rays, pathological fracture of left mid shaft of humerus was documented (Fig 1). Haematologically, total leucocyte counts, erythrocyte sedimentation rate and C-reactive protein were found to be raised. Provisional diagnosis of septic osteomyelitis causing pathological fracture of shaft humerus was made. Patient was counselled regarding the disease, its etiology, course and prognosis. After getting written consent, patient was managed by open biopsy of the lesion, debridement of sinus tract and external fixation of pathological fracture shaft humerus by limb realignment system (Fig 2). Biopsy revealed gram positive bacilli (staphylococcus aureus), confirming the diagnosis of septic osteomyelitis. Post operatively, intra-venous antibiotics were continued for four weeks as per culture reports following which the patient was switched to oral antibiotics for further two weeks. As TLC, ESR and CRP came to baseline, patient was discharged after six weeks of treatment and further followed clinically, radiologically and haematologically initially at two weekly interval then at six monthly interval. Patient was advised for protein rich diet and nutritional supplementation along with calcium and vitamin-D. After three months, fracture showed signs of healing (Fig.4) and at five months fracture got united (Fig.5). After six months Orthofix was removed. At latest follow-up of one and half years, patient had no signs of any recurrence of infection with good osseous union.
Discussion:

Osteomyelitis is one of the common and scary problem encountered in orthopaedic practice. However with advancement in antibiotics, imaging modalities and surgical management, its burden has reduce considerably. Haematogenous osteomyelitis is common in paediatric age group and only few cases have been described in literature showing its presence in immune-competent adults (2). In our case patient has no sign or symptoms of immunodeficiency, he was taking treatment from local physician for one and half month and on worsening of clinical condition reported to us. Management of haematogenous osteomyelitis involves debridement and intravenous antibiotics (1,3). We did open biopsy (to confirm our diagnosis) and debridement of sinus tract along with antibiotics for six weeks. Pathological fracture secondary to osteomyelitis is a complex problem and difficult to manage as it is compounded by presence of infection, inadequate soft tissue cover, weakened bone secondary to disuse osteoporosis and infection and stiffness of adjacent joints. Eradication of infection requires adequate debridement and soft tissue coverage of wound. For fixation of fracture, various types of fixation modalities ranging from internal fixation to external fixation are available depending upon the presence of active infection and quality of bone. Ideally fixation should provide sufficient stability at fracture site which promote fracture healing along with movement. We applied limb realignment system (Orthofix) for management of pathological fracture shaft humerus in our case as it provides rigid and stable fixation. LRS has been used for management of compound fractures, correction of diaphyseal and metaphyseal deformities, limb lengthening and distraction osteogenesis for reconstruction of bone defects (4,5,6,7). In our case bone was weak along with discharging sinus, so we planned for external fixation in the form of LRS. Initially at six weeks follow-up, we observed increase rarefaction at the fracture site(Fig.3). At subsequent follow-up, fracture site started showing signs of union. At the end of five months fracture was united and therefore we removed external fixator at the end of six months.

Union after application of external fixation has been described in children but it is rare in adult and even rarer in pathological fractures. We are reporting this case because of unusual presentation of haematogenous osteomyelitis in immune-competent adult, causing pathological fracture and its management with LRS showing good functional outcome.
Conclusion:

We observed union and good consolidation at fracture site in our case with use of LRS and it can be preferably used in pathological fractures with infection however for consensus we require more cases to observe similar results.

Figures:

Fig.1 Pre-Op

Fig.2 Post-Op

Fig 3. Follow-up at 6-weeks

Fig4. Follow-up at 12-weeks

Fig 5. Follow-up at 5-months
Bibliography: