

CASE REPORT

Isolated Tuberculosis of Patella in a Child: A Case Report and Literature Review

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ABSTRACT

The patella is an uncommon site for skeletal tuberculosis. Its incidence is limited to a few anecdotal case reports or series in the literature. The presence of this clinical entity in the pediatric age group is even rarer. A high index of suspicion and early clinicroadiological diagnosis are the mainstay of treatment coupled with compliant antitubercular treatment. The effective management also mitigates its spread to whole of the knee joint and subsequent arthrosis. A rare case of patella tuberculosis with effective management and good functional outcome in a 9-year-old male child is presented here with relevant details.

Keywords: Antitubercular Treatment, Child, Diagnosis, Knee Joint, Management, Musculoskeletal, Patella, Tuberculosis.

How to cite this article: Dharmshaktu GS, Singh P. Isolated Tuberculosis of Patella in a Child: A Case Report and Literature Review. *Int J Adv Integ Med Sci* 2017;2(2):101-103.

Source of support: Nil

Conflict of interest: None

INTRODUCTION

Skeletal tuberculosis constitutes only 10–15% of the tuberculosis burden, with spine as the most common extrapulmonary site.¹ The knee is the third commonest site after spine and hip joint tuberculosis. Patella tuberculosis in isolation is a very uncommon entity, with one Indian study reporting only one case of isolated patella involvement out of 1,074 cases.² Reported incidence in other studies ranges 0.09 to 0.15%.^{3,4} Most of the time, skeletal diseases are delayed in diagnosis or present with advanced stage or with certain complications. The good part of bony tuberculosis is better prognosis than that with articular involvement due to lesser deformity, pain, and residual disability.⁴ The pauci-bacillary nature of the disease also makes the diagnosis difficult as cultures are often negative for the organism.⁵ A high index of suspicion is instrumental to catch the disease young for prompt treatment. The reports of isolated tuberculosis of

patella in pediatric age are even rarer in incidence. We, hereby, present a case of isolated patella tuberculosis in a 9-year-old child treated accordingly with good outcome.

CASE REPORT

A 9-year-old male child was brought with complaints of swelling over right knee region for past 3 weeks. There was no history of injury, and, initially, mild pain and discomfort in ambulation were reported by the child that was considered unremarkable by the parents. For the past 2 weeks, the swelling had increased in size with a boggy feeling to the child, and pain at an extreme range of movement like squatting and lesser so as in walking. There was no history of fever; diurnal variation was noted. The pain increased on prolonged weight bearing and relieved on rest and limb elevation. No significant constitutional features were noted. The child was given certain pain medications by the nearby practitioner, which he took for 5 days, with little relief before presenting to us. There was no family history present regarding presence of confirmed cases or contacts of tuberculosis. There was history of full course of vaccination including Bacillus Calmette-Guérin until now.

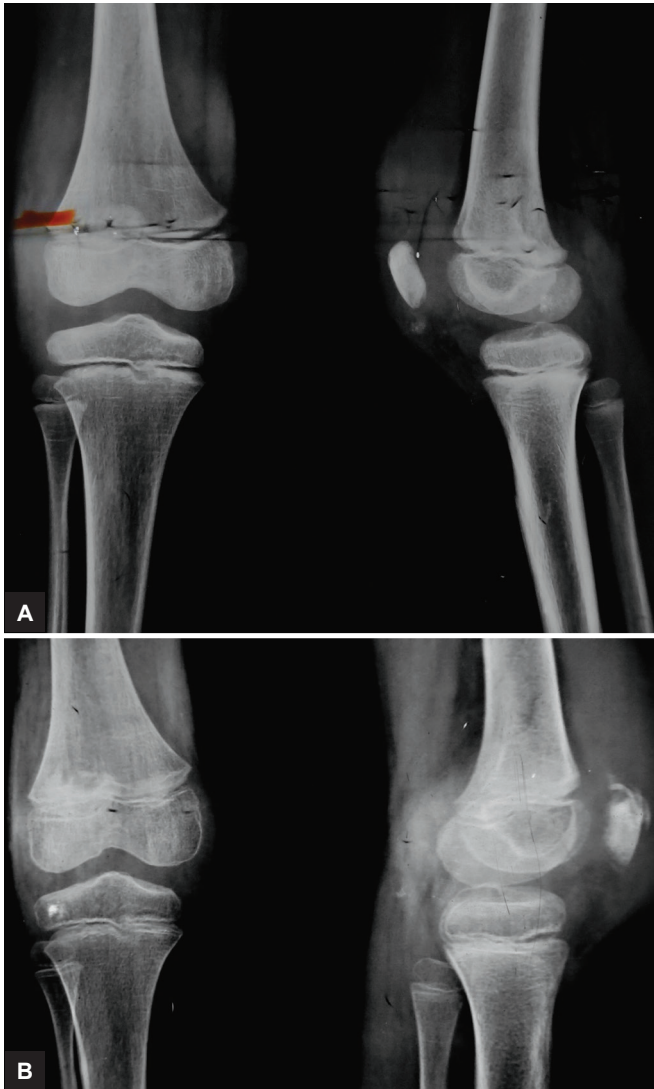
On examination, a mild boggy swelling was noted in the anterior aspect of right knee. There were no skin changes or any wound present. Local temperature was not raised and local tenderness over patella region was present. On lying down, mild effusion could be appreciated at suprapatellar region. There was no associated lymphadenopathy noted. The radiograph of the knee was unremarkable (Fig. 1), and the routine hematological investigations including counts, C-reactive protein, and erythrocyte sedimentation rate (ESR) were sent. The synovial fluid was aspirated and sent for Gram staining, staining for acid-fast bacillus (AFB), and culture sensitivity as per the institutional protocol. Added investigations in the sample were advised to the laboratory, if further confirmation was needed as per the requirement. An above-knee plaster slab in a slight knee flexion was applied, in the meantime, as protection splint and for pain relief. Pain medications were advised along with rest to the extremity.

The report showed leukocytosis with increased lymphocytes apart from raised ESR level of 52 mm in the 1st hour (Westergren). The initial radiograph of the knee in orthogonal planes showed swelling as a soft tissue

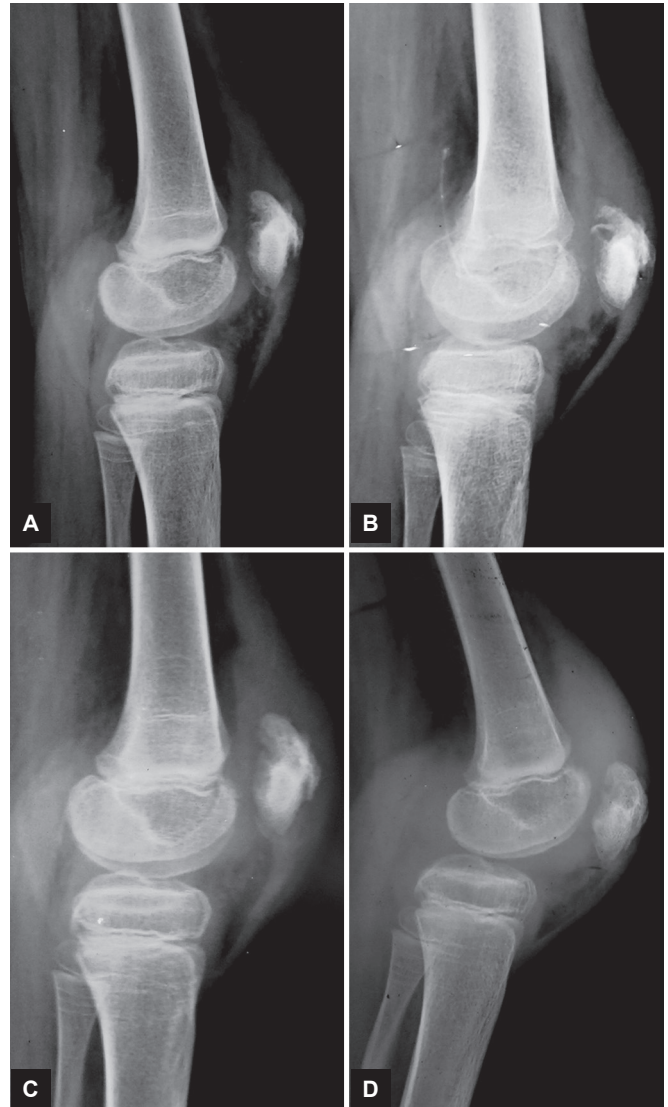
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Figs 1A and B: Initial radiograph at the time of presentation showing knee swelling and normal anatomy: (A) Radiograph after 1 week; and (B) showing patellar surface irregularity



Figs 2A to D: Treatment with changes in patella at (A) at 6 weeks; (B) 12 weeks; (C) 18 weeks; and (D) at 6 months

shadow with no appreciable bony affect (Fig. 1). The repeat knee radiograph 1 week later showed irregularity of the surface of patella (Fig. 2) and the clinical improvement was minimal. No organism was isolated in Gram staining and AFB smear. The AFB culture preliminary report after 2 weeks was negative, but the final report after 3 weeks was positive for *Mycobacterium tuberculosis* complex by BACTEC-MGIT method. The four-drug anti-tubercular therapy was started as per the weight of the child with explanation of dosage, duration of therapy, and compliance. Magnetic resonance imaging was declined by the family. The child was monitored with clinical and radiographic evaluation for a gradual healing and improvement in clinical profile.

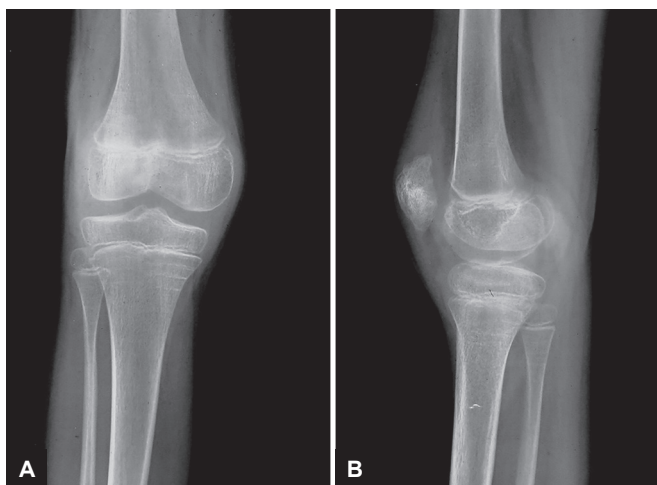
RESULTS

The pain, swelling, and discomfort subsided, and range of motion returned to normalcy during the course of

treatment. The radiograph at the end of 18 months of compliant therapy showed normal contour and shape of patella (Fig. 3). The child was pain-free and was performing activities of daily living without recurrence of the symptoms.

DISCUSSION

The knee and hip joint usually have monoarticular involvement in cases of tuberculosis.⁶ Patella is a rare site for tuberculosis and more so in pediatric immature skeleton. The immature bone, along with open growth plates, hampers the radiological assessment of disease. The bony changes also take time to appear on radiographs, thus further delaying the process. In our case, the initial radiographs were normal except suggesting effusion in the joint. The later serial radiographs clarified patellar involvement, while knee joint proper was maintaining its normal anatomy. The culture and staining for AFB was negative and may be



Figs 3A and B: Healing disease with restoration of patella architecture at 9 months of treatment

due to paucibacillary nature of the disease. The diagnosis by tissue biopsy in cases of negative culture is critical in establishing the diagnosis.⁷ We withheld our plan for invasive tissue sampling for biopsy as final reports with culture were positive for *M. tuberculosis* by BACTEC method. The radiographs were depicting changes in the patella through the course of treatment, and the patella was regaining its normal shape as the treatment progressed with clinical improvement in tandem with it. The absence of any radiological changes in the knee joint denoted isolated involvement of patella. Tuberculosis should be suspected in monoarticular, chronic, and refractory synovitis of the knee. Draining sinus or osteomyelitis with or without sequestrum can be an associated presentation in certain cases. Osteolytic lesion as a presentation has also been reported in patella tuberculosis.⁸ Overall prognosis with compliant antitubercular drugs and supportive measures has been found to be satisfactory in nearly all cases.

CONCLUSION

Knowledge of uncommon locations and presentation helps anticipate and suspect the disease early for prompt diagnosis and treatment. Early diagnosis leads to early therapy and less incidence and magnitude of morbidity or complications. Compliant and supervised course of anti-tubercular drugs accompanied by gentle physiotherapy and supportive treatment leads to uneventful recovery. A series of five immunocompetent cases was reported to have good outcomes without the need for patellectomy or arthrodesis.⁹

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