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Presentation of Tuberculosis as an Intramuscular Abscess in an Infant

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I. INTRODUCTION

India holds the highest global burden of TB , accounting for approximately 26% of world cases in 2024 (1). Extra pulmonary tuberculosis represents a significant proportion of pediatric TB in high burden countries , constituting 15-20% of total cases with musculoskeletal involvement reported in less than 5%(2).

Intramuscular abscesses in infants are typically pyogenic in origin and bacterial cultures commonly yield organisms such as Staph Aureus or E Coli. However, intramuscular abscess due to mycobacterium tuberculosis represents an uncommon extrapulmonary manifestation of tuberculosis in infants.

We describe a case of an 8 months old infant presented with an abscess in the thigh.The lesion corresponds to the site of prior DTP vaccination, initially raising suspicion of a bacterial abscess. Comprehensive diagnostic evaluation including AFB culture and histopathological analysis, confirmed tuberculous etiology.

This case underscores the diagnostic challenges and highlights the importance of considering tuberculous etiology in differential diagnosis of unexplained soft tissue swelling in infants particularly in endemic regions.

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II. CASE PRESENTATION

An 8-month-old female infant was referred to our institution with 3 months history of a gradually enlarging swelling over the left thigh. The swelling was painless, non-erythematous, and was not associated with fever, weight loss, or cough. There was no history of trauma, recent infections, or known exposure to TB. Immunization history revealed administration of the DTP vaccine at the affected site during the third-month schedule, with no immediate adverse reactions. On examination,afluctuant, non erythematous, and a non-tender swelling measuring approximately 5×4cm was palpated in the anterolateral aspect of the left thigh(fig:1).The overlying skin was intact and there was no regional lymphadenopathy. A BCG scar was present on the left upper arm.Systemic examination was unremarkable.A clinical diagnosis of intramuscular abscess, possibly vaccine-related, was entertained.

Laboratory investigations revealed C-reactive protein (CRP) of 11.8 mg/L,total leukocyte count 8,900/mm³, erythrocyte sedimentation rate (ESR) of 20mm/hr. Hemoglobin, renal, and liver function tests were within normal limits.Ultrasonography showed no bony involvement or joint fluid. Given the clinical suspicion of an abscess, she underwent aspiration which showed thick pus(fig:2) and followed by incision and drainage under GA(fig:3).The pus was sent for bacterial culture, AFB stain and AFB culture,Truenat MTB Plus-PCRand curettage of the abscess wall was sent for histopathology.

The bacterial culture was sterile, AFB stain was negative and MTB was not detected on truenat MTB Plus-PCR assay; however, AFB culture grew Mycobacterium tuberculosis. Histopathology revealed granulomatous inflammation with caseous necrosis , consistent with tuberculous etiology.

As per microbiological and histopathological findings, a diagnosis of intramuscular tuberculous abscess was made. Following consultation with the paediatrician, antitubercular therapy (ATT) was commenced at weight appropriate doses with Pyridoxine supplementation and the infant has remained adherent to therapy with good clinical response on follow-up.

III. DISCUSSION

Isolated intramuscular tubercular

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abscesses without any osseous or pulmonary disease is exceedingly rare, with only a handful of pediatric cases documented in literature. Tomar et al described two cases of tubercular abscess following intramuscular injection in children(3). Similarly Chavan et al reported a case of post-vaccination tubercular soft-tissue abscess in the thigh in an infant, implicating possible inadvertent contamination or haematogenous seeding(4).

Given the history of DTP vaccination at the site of abscess in our case raises speculation on pathogenesis. Possible mechanisms include hematogenous spread from an occult primary focus, exacerbated by injection trauma. Another scenario is direct inoculation from contaminated needles, but this is highly unlikely under current standard immunisation practices.

Diagnosis in such cases can be challenging as the patients often lack systemic signs of infection and normal chest radiograph and normal leukocyte counts may lead to delayed consideration of tuberculosis. Imaging may show intramuscular collection but will not distinguish tubercular from pyogenic abscess.

Confirmation requires microbiological (culture, PCR) and histopathologic evidence of granulomatous inflammation with caseation. Our case met these criteria. Therapeutically, surgical drainage combined with antitubercular therapy appears to yield good outcomes. Case reports have documented resolution of swelling and absence of recurrence with standard TB treatment (5). In our patient, the combination of drainage and ATT resulted in excellent response.

This case underscores several learning points

- In infants presenting with intramuscular swelling without pain or systemic signs, TB should remain in the differential diagnosis, particularly in endemic regions.
- A history of intramuscular injection or vaccination at the affected site should raise a suspicion of injection-site TB abscess.
- Early drainage and sending specimens for culture, AFB stain and histopathology are critical for prompt diagnosis.
- Timely initiation of ATT and follow-up lead to favourable outcomes.

IV. CONCLUSION:

This case demonstrates a rare presentation of tubercular abscess in infancy following vaccination. The need for microbiological and histopathological evaluations is being underscored especially in endemic regions for tuberculosis. Prompt management with incision and drainage followed by anti tubercular therapy yields excellent prognosis, thereby preventing complications such as chronic sinus formation or secondary dissemination.

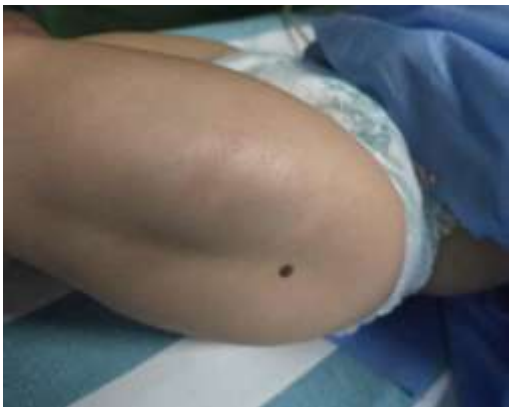

Fig:1 infant with left thigh intramuscular abscess

Fig 2: Showing pus aspiration of pus

Fig 3: Showing Drainage of pus

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