

## Cold Abscess in Thigh of an Infant

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### ABSTRACT

Local and minor adverse reactions to diphtheria-pertussis-tetanus (DPT) vaccination are common and usually mild they appear within 48 hours of vaccination. We, report a case of 3-month-old male child who developed a swelling at left thigh after intramuscular injection at 6 weeks vaccination Primary tubercular abscess was the final diagnosis. The exact etiology for this presentation is unknown; however, wrongful inoculation of the BCG vaccine in place of DPwT vaccine at 6 weeks could be suspected.

**Keywords:** Cold abscess, Thigh, Vaccination

### INTRODUCTION

Local adverse reactions following intramuscular injection of vaccines are common. Localized abscess at the same site of (BCG) vaccine are also known. However occurrence of these abscesses at other sites is an unusual complication. Tuberculosis of skeletal muscles was first described in 1886 and is a rare entity. As there is absence of reticuloendothelial cells, lymphatics and poor oxygen content in muscles, which makes them resistant to tuberculosis. Skeletal muscles and soft tissues may be affected by direct inoculation of the bacteria or by spread from adjacent tissues. Direct inoculation occurs by using contaminated syringes or spread of infection by an open case from the person giving immunisation. We report a rare case of tubercular abscess of thigh following vaccination.

### CASE REPORT

A 3-month-old male child presented to our OPD with a swelling on the anterolateral aspect of left thigh, progressive

for past 4 weeks. There was no history of fever, weight loss, cough; excessive crying or pain on movement and no history of contact with tuberculosis (TB) patient. On examination it was soft, fluctuant, non-tender, swelling of 5x6cm on anterolateral aspect of thigh (fig.1). The overlying skin was normal, not warm, non erythematous, non-tender and non-pulsatile There was no joint restriction and no similar swelling at any other site. There was a BCG scar in the left upper arm .The systemic examination of the child was unremarkable. Anthropometric parameters and developmental milestones were appropriate for age. The laboratory test showed total leukocyte count of 8000/cumm(70% neutrophils, 24% lymphocytes); hemoglobin 8.1 g/dl; erythrocyte sedimentation rate 12 mm/h; C-reactive protein 5.8 mg/L; liver function test and coagulation profile were normal; blood culture was sterile and serology for HIV was negative. Fine needle aspiration of pus on microscopy was suggestive of presence of Acid-Fast Bacilli

and CBNAAT for the pus sample was suggestive of presence of mycobacterium tuberculosis. X ray thigh, hip joint and spine (fig.2,3) revealed no bony abnormality and no evidence of osteomyelitis or no evidence of spinal tuberculosis. This child had no history of contact with tuberculosis. On further investigations (Chest X-ray, gastric aspirate for CBNAAT and ultrasound

abdomen), no evidence of tuberculosis and screening of caregivers was also non-contributory. The infant had received BCG vaccination at birth, BCG scar was present and Mantoux test done was positive. Antitubercular treatment with four drugs as per FDC regimen was started and child was thriving well on subsequent visits and the swelling had subsided.



Fig 1



Fig 2



Fig 3



Fig 4

## DISCUSSION

In India, BCG is given to all newborns at birth as per WHO recommendations. [1] Whereas Cold abscess refers to an abscess that lacks the intense inflammation. [2] In developing nations, tuberculosis still remains the most common cause of cold abscess. [3] In our child, there was no evidence of TB of spine, thigh, pubis, or any other parts of body; there was a clear history of the appearance of swelling

at the site of intramuscular injection. In context of AFB positivity and FNAC from swelling suggestive of TB, it was difficult for us to explain the origin of infection. A possible explanation could be inadvertent intramuscular administration of BCG vaccine at 6 weeks, in place of DwPT vaccination. Due to the availability of disposable syringes in the present era for vaccination, the possibility of contamination seems unlikely. Tubercular infection at the

site of injection following intramuscular BCG vaccination in place of DwPT vaccination is more likely in our case. Unfortunately, there are few case reports of inadvertent intramuscular injection of BCG. [7,8] This should be a type of adverse event following immunization as per WHO definition. Mycobacterium tuberculosis causes up to 21.5% of post vaccination abscess cases. [5] Most of reported cases are attributed to use of a contaminated needle/syringe and lack of aseptic measures while administration. [6] In our case no distant foci for the tubercular infection was found on investigation. X ray spine, thigh and hip joint was normal that rules out spread from neighbouring structures. Direct inoculation at the site of injection by use of contaminated syringes is a possibility but due to use of disposable syringes it is ruled out. There are reports in the literature where excessive coughing by infected nursing staff has led to contamination of the injection site by tubercular bacilli and subsequent development of tubercular abscess. Tamura et al, reported 102 children who were given typhoid vaccine, later developed induration at the vaccine site and later axillary lymphadenopathy. One of the three vaccinator was later found to be an open case of pulmonary tuberculosis. In our case there is preceding history of vaccination and the site of abscess is the same as the vaccination site but it can not be incriminated as the cause. It may be postulated that the intramuscular injection damages the local tissue in some unknown way so that organisms, apparently dormant elsewhere, lodges in the area of decreased resistance. [4] However, the time required for soft tissue tuberculosis to evolve after primary complex formation in lungs is

usually in years, and presentation in early infancy makes the pathogenesis unclear

## CONCLUSION

Cold abscess at intramuscular injection sites following vaccination could be due to administration of intramuscular BCG vaccine in infants or due to direct spread by vaccinator. We try to sensitize pediatricians and health care providers about the possibility of such adverse reaction following vaccination, especially when adjacent joints and bones are normal.

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