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Case report

Acute osteomyelitis associated with Deep vein thrombosis in a patient of acute abdomen: A diagnostic dilemma[☆]

Vineet Jain MS, DNB^{a,*}, Vikram Singh MS^b, Amit Mishra D Orth^c^a Assistant Professor, Orthopaedics, Sports Injury Centre, Safdarjang Hospital, N. Delhi 110029, India^b Assistant Professor, Surgery, School of Medical Science and Research, Sharda University, 32-34, Knowledge Park III, Gr. Noida, UP, India^c Senior Resident, Orthopaedics, School of Medical Science and Research, Sharda University, 32-34, Knowledge Park III, Gr. Noida, UP, India

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ABSTRACT

Deep vein thrombosis associated with acute osteomyelitis is a rare presentation. Such a presentation can lead to delay in diagnosis especially due to overlapping clinical presentation and usually has a poor prognosis. Only a high level of clinical suspicion can help in diagnosis. We present such case which patient presented with acute abdomen with swelling in lower limb.

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1. Introduction

Osteomyelitis is one of the commonest infective pathology, presenting in paediatric orthopaedics. But Deep vein thrombosis (DVT) with osteomyelitis is a relatively rare occurrence.^{1–11} It has been usually reported as secondary to Staphylococcal infection.^{6–11} There is no previous report of such a combination initially presenting with acute abdomen. Such cases are usually diagnostic dilemma due to overlapping clinical presentation of DVT and osteomyelitis and have relatively poor outcome. We report one such case presenting as acute abdomen with swelling of lower limb.

2. Case report

A 4-year-old child presented in the emergency department with complaint of pain in abdomen, fever and swelling in

right lower limb for 3 days. Child had not eaten and passed stools for 1 day. The child had sick looking appearance, dehydrated with pulse rate of 116/min, respiratory rate of 22/min, temperature was 101.4 °F. There was diffuse swelling of left lower limb with painful restricted movements of knee and hip joint, generalised erythema, tenderness, local temperature was mildly raised and Homans sign was positive. Abdomen was mildly distended with generalised tenderness and bowel sounds were absent. X-rays of hip with thigh and knee joint were normal. X-ray of abdomen revealed air fluid levels. Chest X-ray and ultrasound of abdomen were normal. Doppler of left lower limb revealed Deep vein thrombosis extending up to common iliac vein from popliteal vein with no distal augmentation. Haematological investigations revealed haemoglobin of 9.6 gm/dl, TLC 13,000/mm³, BUN 40 mg/dl, sodium 135 mEq/l and potassium 2.8 mEq/l. Platelet count, PT and aPTT were normal.

[☆] Place of study: School of Medical Science and Research, Sharda University, 32-34, Knowledge Park III, Gr. Noida, UP, India.

* Corresponding author. Tel.: +91 9810324416; fax: +91 011 26181917.

E-mail address: vineet.ortho@gmail.com (V. Jain).

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A diagnosis of acute abdomen with Deep vein thrombosis with septicaemia with dehydration was made and child was started on intravenous fluids, Ceftriaxone, Gentamicin, Heparin and Ryle's tube was inserted. Patient was shifted to oral Biscoumarin from 3rd day and dose titrated to maintain INR between 2 and 3. Bowel sounds returned and child was gradually allowed on oral diet with conservative treatment only. Aerobic blood culture revealed *Staphylococcus aureus* sensitive to Vancomycin, Cefotriaxone and Gentamicin.

Child gradually improved but had marked pain in left lower limb and continued to have high grade fever. On 6th day fluctuation was noticed on posterolateral aspect of left knee, aspiration revealed purulent material. Incision and drainage was done to evacuate pus and bone biopsy taken from distal femur. Aerobic culture of purulent material was sterile. Child now became afebrile but developed a discharging sinus at site of incision and drainage. He didn't develop any respiratory problem during his stay in the hospital. He was kept on intravenous antibiotics for 2 weeks followed by 4 weeks of oral Amoxycillin and Sulbactam combination. The sinus healed after 6 weeks.

X-rays of thigh done at 3 weeks, 2 months and again at 6 months follow up revealed sequestrum extending from distal to proximal femur with later formation of surrounding involucrum (Figs. 1 and 2). Doppler study at 6 months showed complete resolution of thrombus.

3. Discussion

Deep vein thrombosis is a rare occurrence in children with estimated incidence of 0.07 per 10,000 with neonates and

Fig. 1 – X-ray antero posterior view of hip with thigh showing sequestrum involving whole shaft of femur with surrounding involucrum.

Fig. 2 – X-ray lateral view of hip with thigh.

adolescents being the most susceptible groups.¹² *S. aureus* is the commonest cause of osteomyelitis and there are few reports of it being associated with DVT. In most of the cases this combination also leads to pulmonary thrombo-embolism which can be life threatening.^{6–11} It has been proposed that release of various exotoxins by *S. aureus* cause platelet aggregation and smooth muscle contraction. Furthermore coagulase enzyme interacts with fibrinogen and causes plasma to clot. All these factors predispose development of DVT adjacent to osteomyelitis in cases of *S. aureus* septicaemia.¹³

The challenge in such cases is diagnosis of the condition and prognostication. Either osteomyelitis or DVT is likely to be diagnosed late in such cases as the clinical picture is overlapping. In the initial stages as there is no radiological finding in osteomyelitis, high degree of clinical suspicion and investigations like MRI, bone scan only will be able to detect it.

Due to fulminant nature of infection in such cases and delayed diagnosis, the prognosis is poor. These patients require longer hospital stay, intensive care and more surgical procedures as compared to osteomyelitis without DVT.^{8–11}

As far as the treatment is concerned DVT and osteomyelitis are to be treated as separate entity with standard treatment protocols. DVT is usually treated with initial intravenous Heparin followed by oral anticoagulants like Warfarin or

Biscoumarin titrated to keep INR 2. LMWH is another treatment option which doesn't require regular PT, aPTT monitoring and have fewer side effects as compared to Heparin or oral anti-coagulants. Osteomyelitis is treated with appropriate intravenous antibiotics according to culture and sensitivity of organism grown and surgical drainage and debridement as required. In this case pus culture from site of osteomyelitis was sterile as patient had been on intravenous antibiotics for *S. aureus* for 6 days. Rarely surgical treatment of DVT is required when anticoagulant therapy is contraindicated or ineffective.

In our case the presence of acute abdomen due to paralytic ileus most probably secondary to *S. aureus* induced septicaemia leading to electrolyte imbalance further complicating the presentation.

It is therefore advisable to always investigate for DVT or osteomyelitis in case of either presentation in children. This will help in earlier diagnosis, treatment and prognostication of the patient.

Conflicts of interest

No benefits in any form have been received or will be received from a commercial party related directly or indirectly to the subject of this article.

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