Picture Stories

A case of spondylodiscitis complicated by vertebral destruction in a neonate secondary to *Staphylococcus aureus* infection

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Sri Lanka Journal of Child Health, 2019; **48**(4): 361-363
DOI: http://dx.doi.org/10.4038/sljch.v48i4.8838
(Key words: Spondylodiscitis, vertebral destruction, neonate, Staphylococcus aureus)

Introduction

Staphylococcus aureus is a common cause of neonatal sepsis which can lead to complications such as meningitis, cerebral abscess, endocarditis and osteomyelitis[1]. Vertebral osteomyelitis is a rare sequel of staphylococcal infection[2]. We report a neonate with *Staphylococcus aureus* infection complicated by destruction of the thoracic vertebrae due to spondylitis.

Case report

A 10-day-old baby boy presented to a district general hospital with fever, poor feeding and irritability of 2 days duration. He was the second child born to non-consanguineous parents following elective lower segment caesarean section with a birth weight of 3.29kg. There were no risk factors for sepsis in the antenatal or perinatal periods. On admission, he was febrile but otherwise normal. Investigations revealed neutrophil leucocytosis with a C-reactive protein (CRP) of 63mg/dl (Table 1).

Table 1: ***Investigations carried out on infant***

Investigation/ Day	Day 11	Day 32	Day 36
White blood cell count (/cu mm)	14,100	16,500	22,800
Neutrophils (%)	54.2	68.5	63.0
Haemoglobin (g/dl)	14.0	12.1	9.5
Platelet count (/cu mm)	301,000	610,000	640,000
C-reactive protein (mg/dl)	63	11	199
Blood culture	Staph. aureus	No growth	Staph. aureus

The cerebrospinal fluid (CSF) analysis was normal. The baby was commenced on intravenous (IV) penicillin and cefotaxime following blood culture, which grew *Staphylococcus aureus*. Due to lack of clinical response and rising CRP (100mg/dl), antibiotics were changed to IV vancomycin to which he responded. He was discharged after 21 days of IV antibiotics and remained afebrile for 4 days. At the time of discharge, CRP had reduced to 11mg/dl and the second blood culture was sterile (Table 1).

On the 36th day of life, he again presented with fever, extreme irritability and crying while handling. Investigations revealed neutrophil leucocytosis and high CRP (199mg/dl) (Table 1). Blood culture grew *Staphylococcus aureus* and it was sensitive to both flucloxacillin and vancomycin. The baby was commenced on IV vancomycin. Due to poor response he was reinvestigated and computed tomography (CT) of the thoracolumbar spine with three dimensional (3D) reconstruction revealed a defect in the vertebral column at the level of thoracic 9 and 10 vertebrae (Figure 1).

Magnetic resonance imaging (MRI) of the spine showed features of advanced infective spondylitis involving T9 vertebral body and adjacent disc and extensive pre- and para-spinal mass suggestive of an abscess compressing the spinal cord (Figure 2).

He underwent costotransversectomy and excision of the mass at the level of thoracic 9 and 10 on day 42.

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(Received on 12 June 2018: Accepted after revision on 20 July 2018)
The authors declare that there are no conflicts of interest
Personal funding was used for the project.

Repeat MRI after 1-week showed reduced pressure effect on the spinal cord and disappearance of epidural mass (Figure 3)

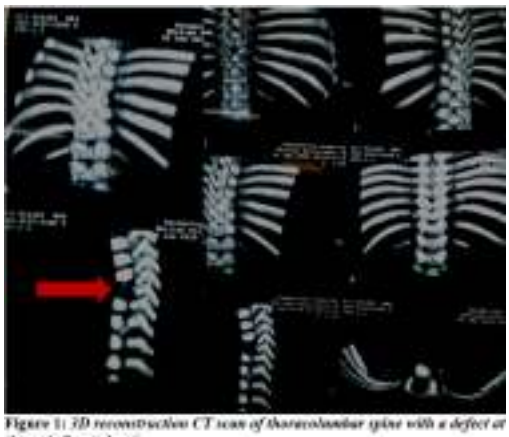

Figure 1: *3D reconstruction CT scan of thoracolumbar spine with a defect at thoracic 9 vertebrae*

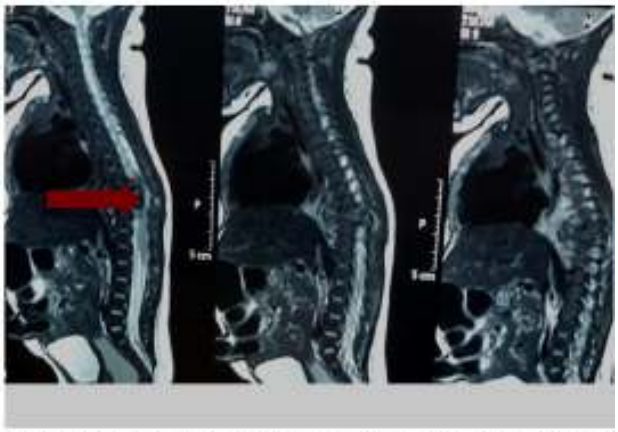

Figure 2: *Spinal mass suggestive of an abscess compressing the spinal cord*

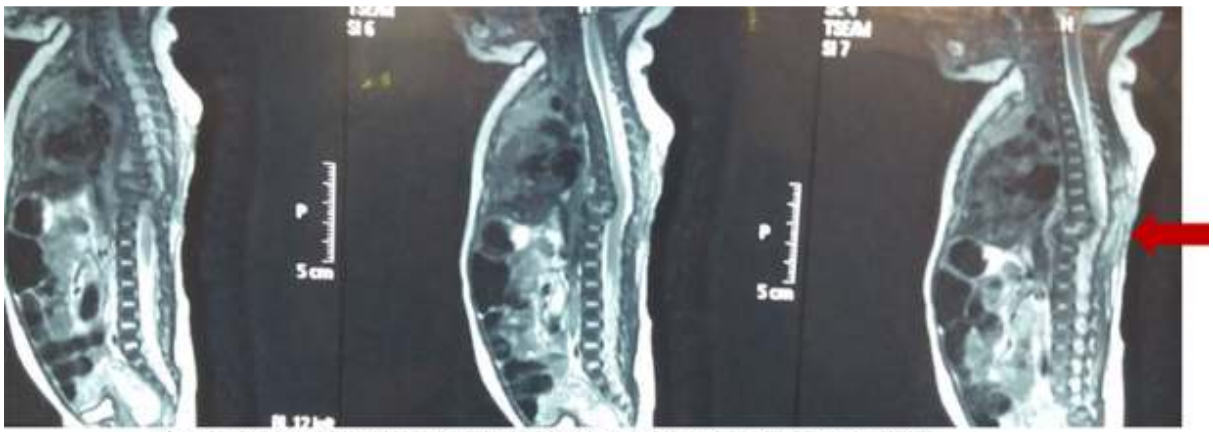

Figure 3: *Reduced pressure effect on the spinal cord following surgery*

The baby was continued on IV antibiotics for a period of 6 weeks and due to the discontinuity of the vertebral column a thoracolumbar brace was applied (Figure 4).

Figure 4: Two month old baby with thoraco-lumbar brace

Despite severe systemic infection he had normal growth and development and the review at the age of 3 months revealed no focal neurological signs.

Discussion

Infectious spondylodiscitis (ISD) is a rare clinical entity in neonates which accounts for 1-2% cases of neonatal osteomyelitis[3]. *Staphylococcus aureus* is the aetiology in 80% cases of ISD whilst coagulase negative staphylococcus, *Streptococcus pneumoniae*, *Salmonella typhi* and *Escherichia coli* are responsible in a minority of cases[3]. Mostly, the organism reaches the spine haematogenously but in some cases it is secondary to local invasion following trauma[4]. The commonest site of ISD is the lumbar spine followed by the thoracic[5]. Clinical features of ISD in neonates are severe, compared to that of other age groups, and complete destruction of the vertebral body is a possibility. In this case, there was complete destruction of thoracic 9 and 10 vertebral bodies.

Since there are no specific localizing signs and the scarcity of the condition, the diagnosis of ISD is usually made late. In fact, some authors have

described cases diagnosed with a delay of 4-6 months[6]. However, in this patient the diagnosis of ISD was made within 4 weeks of initial presentation. Though the radiographic abnormalities such as narrowing of the intervertebral disc spaces and the destruction of the discs appear in 2-3 weeks into the illness, in some cases, spinal x-ray remains normal even at the advanced stage of the disease[3]. MRI, which has 96% sensitivity and 93% specificity remains the gold standard diagnostic test of ISD[4].

Management of *Staphylococcus aureus* induced ISD in neonates depends on the severity of the condition. Since, methicillin resistant *Staphylococcus aureus* is common, vancomycin is the drug of choice. However, in this case, MRSA was not isolated and the baby responded well to flucloxacillin. The duration of antibiotic therapy varies depending on the clinical response but, in general, it should be 6-8 weeks[3]. Surgical interventions are required when there is failure of response to medical therapy or complications occur such as cord compression[6]. Furthermore, it is important to maintain spinal immobility to allow natural healing process. In this case, a spinal brace was applied in order to prevent spinal movements.

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