



REVIEW ARTICLE

PARASPINAL ABSCESS IN A NEONATE WITHOUT EPIDURAL EXTENSION-A RARE ENTITY OFTEN MISDIAGNOSED

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ABSTRACT

Background: Paraspinal abscess during the neonatal period is extremely uncommon. Few case reports have been reported in the age group 3-12 years. **Case Presentation:** A neonate had presented with progressive paraspinal swelling. Radiological Investigations suggested it to be either a cystic lymphangioma or Meningomyelocele. However Clinical findings and lab reports strongly suggested an inflammatory lesion. **Management and outcome:** in view of strong clinical suspicion, an Incision and drainage of the abscess was done. It revealed frank pus which was sent for culture and sensitivity. Patient was put on I.V. antibiotics and responded well to treatment. **Conclusion:** Paraspinal abscess should be considered as a differential diagnosis in a neonate presenting with spinal swelling with signs of inflammation. Over reliance on radiological investigations superseding clinical examination can prove detrimental.

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INTRODUCTION

Superficial soft tissue infections involving the paraspinal region in neonates are rare but potentially life-threatening. The youngest age of presentation of this condition reported till date was in a 3-year-old child. (1-3). Neonates are predisposed to invasive bacterial infections due to immunological immaturity. Hematogenous spread is considered the predominant mechanism of infection in this age group. (1,7) Staphylococcus aureus remains the most frequently isolated pathogen in neonatal musculoskeletal infections. (1,7,8). We report a rare case of localized paraspinal abscess extending from lower cervical region to coccygeal tip in a 15-day-old neonate.

Clinical description: A 15-day-old male neonate, born late preterm (36w 5d) via LSCS (birth weight 2.3 kg), presented to a private clinic with fever for three days and a progressively enlarging swelling over the lower back for two days. There was no history of birth trauma, invasive procedures, or maternal peripartum infection. Feeding had decreased over the preceding 24 hours. On examination, the neonate was febrile (38.5°C) but hemodynamically stable. Local examination revealed midline cystic swelling extending from lower cervical region to coccygeal tip with signs of inflammation.

The swelling was fluctuant with no sinus or discharge (fig 1 A). Neurological examination demonstrated normal tone of anal sphincter and symmetrical limb movements. Blood investigations revealed a haemoglobin of 4.9 g/dl, Total leukocyte count of 21,000/mm³ (neutrophil predominance 83%), Platelet count of 300000 cells/mm³ and CRP of 83 mg/l. Blood cultures which were obtained prior to initiating antibiotics came sterile. Ultrasonography of the swelling was suggestive of spinal dysraphism and a provisional diagnosis of meningomyelocele was made. Magnetic resonance imaging (MRI) along with whole spine screening (WSS) (fig 2 A and B) however suggested a cystic swelling with septations confined to the paraspinal muscle plane without evidence of epidural extension, vertebral osteomyelitis, or disc involvement- possibility of cystic lymphangioma.

Management and outcome: The patient was referred to our tertiary care center for expert Pediatric surgery care. Based on clinical findings of erythema, raised temperature of the swelling along with positive fluctuation sign on examination, the decision of performing incision and drainage of the swelling was made. Approximately 50 mL of thick purulent material was evacuated and sent for culture sensitivity and CBNAAT examination (Fig 1 B)



Fig. 1A. Preoperative Picture of the abscess



Fig 1B. Just after Incision and drainage of the abscess

Culture of the pus did not grow any organism. CBNAAT report did not detect the presence of Acid fast bacilli. Broad spectrum antibiotic (Meropenem & Vancomycin) therapy was continued. The cavity was irrigated with normal saline and dressings were done with mupirocin ointment. After 3 days the cavity became dry and there was no active discharge.

The neonate became afebrile, inflammatory markers normalized (CRP 8 mg/l) and feeding improved. Intravenous antibiotics were continued for 14 days. Follow-up was done on weekly basis for 2 months, the infant was thriving well with complete resolution of the swelling and no neurological deficit. (Fig 1 C)



Fig 1C. At 2 weeks follow up

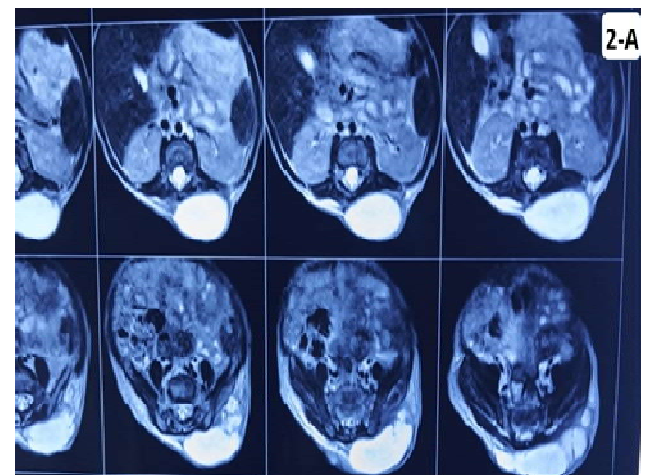


Fig 2A. Axial section of T2W MRI of paraspinal region showing subcutaneous hyperintense collections

DISCUSSION

Spinal and paraspinal infections in neonates are infrequently encountered in pediatric surgical practice (1–3) The majority of documented neonatal cases involve epidural abscess, often associated with vertebral osteomyelitis (2,3) In contrast, isolated paraspinal abscess without intraspinal extension, as observed in our patient, is rare and to our knowledge, is the first documented case.

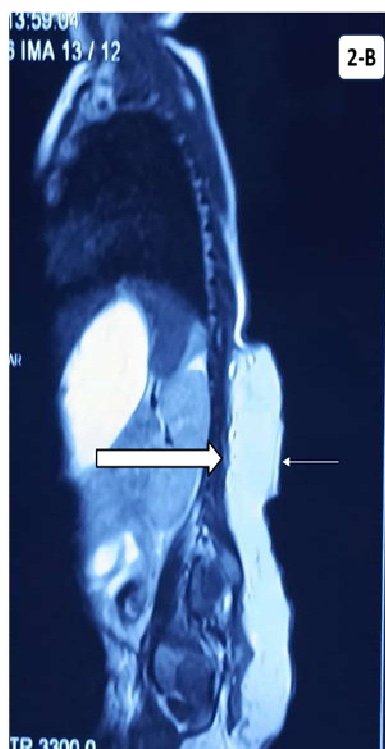


Fig 2B. Sagittal section of same MRI showing epidural space solid arrow-slightly hyperintense) and subcutaneous collections (Short arrow-hyperintense)

The pathogenesis in neonates is commonly attributed to hematogenous dissemination. (7) Minor skin breaches or transient bacteraemia may seed the richly vascular paraspinal musculature (8) Clinical manifestations in neonates are often subtle and nonspecific, including fever, poor feeding, and localized swelling. The classical pentad of inflammation may or may not manifest clinically leading to a diagnostic dilemma (2,3). The absence of neurological signs does not exclude deep-seated infection. Therefore, a high index of suspicion is must and appropriate aggressive treatment is warranted. It is important to keep other differential diagnosis in mind as this region is the site for neural tube defects as well. Ultrasonography is the initial imaging modality for detecting superficial or intramuscular collections. MRI remains the investigation of choice to delineate the extent of infection and exclude epidural or vertebral involvement. (2,8) However, as is evident in this case, clinical judgement is ultimately superior to any imaging modality and thus is paramount in management of patients. Once the diagnosis of paraspinal abscess is made, early differentiation between isolated paraspinal abscess and spinal epidural abscess is crucial, as the latter carries significant risk of neurological compromise which carries a grave prognosis.

Management strategies emphasize prompt initiation of broad-spectrum intravenous antibiotics followed by culture-directed therapy. Surgical drainage remains the mainstay of treatment for uncomplicated cases (1,3,8).

In this case, since antibiotic therapy was already started before referring the neonate to our department, without considering paraspinal abscess as one of the differentials, we lost crucial evidence in the form of a positive pus culture and thus we are not aware of the causative organism. We have also learnt that early intervention significantly reduces morbidity and prevents progression to epidural extension or systemic sepsis.

Lessons learnt

- Paraspinal abscess can occur in otherwise healthy neonates without identifiable risk factors.
- A strong index of suspicion is required to diagnose the condition. While radiology acts as an excellent adjunct, it cannot supplement clinical judgement.
- Early surgical drainage combined with appropriate antibiotics results in excellent outcomes. Any delay can be detrimental owing to close proximity to spinal cord.

CONCLUSION

Isolated paraspinal abscess in neonates is rare but should be considered in neonates presenting with fever and localized back swelling. Prompt imaging and timely surgical drainage, along with targeted antimicrobial therapy, are key to preventing serious complications.

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