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Original Research Paper

# SERRATIA MARCESCENS SPINAL EPIDURAL ABSCESS IN A PAEDIATRIC PATIENT: CASE REPORT & REVIEW

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ABSTRACT Serratia marcescens is a frequent gram negative bacilli causing hospital acquired infections. Serratia marcescens are usually opportunistic pathogens affecting predominantly patients with comorbid conditions and risk factors like diabetes and immunosuppressive status. To our knowledge, this is a rare case report of Serratia marcescens causing Spinal Epidural Abscess in a immunocompetent paediatric patient without comorbids or predisposing risk factors. This research paper also gives a brief review of pertinent literature on Spinal Epidural Abscess and stresses the importance of stringent antimicrobial therapy and the need for rapid diagnostic evaluation, and early surgical management in order to prevent morbidity and mortality.

KEYWORDS : Serratia marcescens, Spinal Epidural abscess (SEA), Paediatric

# INTRODUCTION

The Spinal Epidural Abscess (SEA) is a rare disease but with significant mortality. The majority of SEA is caused by Gram Positive bacteria like Staph. aureus. Gram-negative bacteria are identified as causative organisms of Spinal Epidural Abscess in less than 5% of Spinal Epidural Abscess cases. Gram negative bacteria like Serratia marcescens is rarely reported in literature as a causative agent of Spinal epidural abscess in paediatric population. Serratia marcescens are mostly opportunistic pathogens in patients with comorbids like diabetes and immuosuppressive status. A Relatively rare case of Spinal Epidural Abscess due to Serratia marcescens infection in a paediatric patient without comorbids or predisposing risk factors is reported here.

## CASE REPORT :

2 years old male child , a known case of intramedullary epidermoid cyst in D9 to L 1 level operated at one year of age , presented with complaints of severe back pain in the operated region for 15 days duration, more in night, which subsided only intermittently with analgesics. No H/o Fever, vomiting, headache or Seizures; No history suggestive of any other new neurological deficits. No H/o Bowel or Bladder disturbances. On examination the child was alert, active, Pupils equal & reacting to light, EOM full, was taking oral feeds. Bilateral upper limbs tone normal & power 5; Bilateral lower limbs had flaccid paraparesis. No sensory abnormalities. No meningeal signs.

Past History : At the age of one year , Patient had insidious onset gradually worsening weakness of both lower limbs for 15 days duration with h/o straining while passing urine and stools. So Patient then had underwent MRI Dorso lumbar spine with whole spine screening at one year of age which revealed a intramedullary cystic SOL of size  $1.4 \times 0.7$  cm at D10 to L2 level with the lesion showing peripheral contrast enhancement. Patient then underwent D9 to L1 laminectomy followed by midline durotomy & excision of SOL done. Intraop Findings included: Spinal Cord was found bulging. Lesion was greyish, soft, and suckable. A milky white aspiration of the cystic lesion aspiration done. HPE came as Epidermoid Cyst. Post operatively patient did not develop new neurological deficits and motor power of both lower limbs remained status quo with no improvement. Patient was advised limb physiotherapy and discharged. Since then patient had been

under regular follow up and was symptom free till current admission.

## Management:

In the Current admission, Routine Laboratory analysis of Blood and urine were inconclusive. Latest MRI Imaging of Dorsolumbar Spine with whole spine screening with contrast revealed a non enhancing cystic lesion of size  $5.4 \times 1.8 \times 1.8$  cm at D 11 to L 2 level without enhancement of the cyst wall giving an impression of recurrent epidermoid cyst. Advise was given to correlate clinically.



# Figure 1 : MRI-T 2 Sagittal

Operation Details : Patient underwent re-exploration surgery through the old incision with microscopic guidance and intraoperative frank copious pus discharge present in posterior epidural plane. Then Spinal Epidural Abscess was completely evacuated all around. Thorough Saline wash given. Then Durotomy was done and thecal sac structures were inspected and were found to be normal. Water tight Dual closure done. Wound closed in layers and sterile dressing was done.

## VOLUME-9, ISSUE-5, MAY -2020 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra



Figure 2 : Intraoperative Picture revealing the epidural abscess

Microbiological Analysis : Culture and Sensitivity Report of the Purulent material revealed growth of Serratia marcescens sensitive to Ceftazidime, Gentamicin and Trimethoprim-Sulfmethoxazole.

In the postoperative period based on Culture and Sensitivity antimicrobial regimen was adjusted. Post operatively patient improved symptomatically and became pain free completely.There was no further complaints and was discharged. Thus early and timely surgical evacuation of abscess with appropriate antibiotic coverage gave good results in this patient.

The case reported here is unique in the sense that

- a) Serratia marcescens is found to be the causative agent of Spinal Epidural Abscess in a paediatric patient without any inciting event or predisposing risk factors.
- b) SEA could not be made out conclusively in preoperative neuroimaging.
- c) Only intraoperatively Spinal Epidural Abscess was made out and Microbiological Studies revelaed Serratia marcescens growth. Based on Culture and sensitivity patient was treated postoperatively and patient recovered and discharged.

This stresses the importance of early diagnosis and management of Spinal Epidural Abscess. Imaging with MRI or CT can help in early diagnosis of spinal epidural abscess .But a high index of suspicion has to be kept in mind even if imaging is inconclusive or predisposing factors are absent. Optimal therapy is surgical evacuation combined with antimicrobial chemotherapy.

## **DISCUSSION & LITERATURE REVIEW**

Spinal Epidural Abscess (SEA) is an uncommon infectious disease with a reported incidence in pediatric patients of 0.6 to 1.5 per 10,000 hospital admissions.(1, 2) However, the classic symptomatic triad associated with SEA—back pain (70% to 100%), fever (50%), and neurologic manifestations (33%)—are found in only 8% of the patients. The disease per se is rare. Only very few patients present with the classic triad. As there is low percentage of predisposing risk factors, the diagnosis of SEA in pediatric patients becomes difficult and gets delayed often. This may lead to development of neurologic deficits even in pediatric patients (15% to 25%) (3,4).

The Spinal epidural abscess is a rare disease that is associated with a significant mortality rate of 15 %. Risk factors for Spinal epidural abscess development studied and identified include distal infective foci elsewhere, trauma, immune suppression, diabetes mellitus, renal failure and intravenous substance abuse (5). But Spinal epidural abscess in the absence of documented risk factors represents fewer than 5% to 20% of occurrences (5, 6). So Spinal epidural abscess cannot be ruled out in patients just because they do not have any risk factors and comorbids. This becomes important especially in paediatric age group as illustrated in this case report.

SEA is common in lumbar spine 48% followed by thoracic 31% and lastly cervical approximately 24% though it can involve extensively across the spine. The Sensitivity of Neuroimaging is only 90% overall and may be inconclusive in acute cases as illustrated by the present case (5).

The most common bacterial pathogen causing Spinal Epidural Abscess is S. aureus in 66 % of cases ; gram negative bacilli accounts for 16 % of cases of which Klebsiella pneumoniae accounts for 1 % of Spinal epidural abscess (7). Among the gram negative bacilli, Klebsiella pneumoniae accounts for approximately 1% of SEA (8).

Serratia marcescens, gram negative bacilli is rarely reported in the literature as causative agent of epidural abscess in paediatric population without inciting factors. As per Literature Serratia marcescens are opportunistic and usually causes nosocomial CNS infections like osteomyelitis, spondylodiscitis, meningitis, brain abscesses secondary to spread from other septic foci in patients with risk factors like immune suppression, diabetes mellitus, renal failure, steroid use and malignancy, drug abuse. But in each one of these case reports, a risk factor or predisposing factor could be identified. In our paediatric case report, no such inciting factor could be identified.

S marcescens has been previously reported to have cause isolated SEA without inciting factors in a case report of 36year-old man presenting with cauda equina syndrome.(9) . Gram negative bacteria like Serratia marcescens is rarely reported in literature as a causative agent of Spinal epidural abscess in pediatric patient with or without the documented risk factors and comorbid conditions.

Abscesses in children were more posterior in epidural location; more extensive and associated with more favorable clinical outcomes as reported in our case because children have less segmented epidural fat. In adults Spinal epidural Abscess were more anterior in location; less extensive but associated with less favorable outcomes when compared to Children.

# **CONCLUSION:**

SEA in children are rare but can present as medical and surgical emergency. So they require prompt diagnosis and treatment for better outcomes. Though S. aureus is the most frequent cause of spinal epidural abscesses in children unusual organisms like Serratia marcescens can cause SEA in paediatric patients which stresses the importance of microbiological analysis. A combination of surgical drainage and antibiotic therapy may be required for spinal epidural abscesses in children for better outcomes. The most important factor to know is that some patients with SEA have no risk factors. Over Reliance on published risk factors in literature for SEA has to be avoided because of their absence in a significant proportion of patients.(4)

## **REFERENCES:**

- 1. Auletta JJ, John CC: Spinal epidural abscess in children: A 15-year experience and review of the literature. Clin Infect Dis 2001;32:9-16
- Knorr TL, Mesfin FB: Abscess, spinal epidural. StatPearls Publishing [Internet]. Treasure Island, FL: Statpearls Publishing, 2018.
  Grevitt MP, Mehdian SH: Epidural abscess in an infant. Eur Spine J 1998;7:
- 413-415. 4 Bond A Manian FA: Spinglenidural abscess: A review with specific emphasis
- Bond A, Manian FA: Spinal epidural abscess: A review with specific emphasis on earlier diagnosis. Biomed Res Int 2016; 2016:1614328

# VOLUME-9, ISSUE-5, MAY -2020 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

- 5. Reihsaus E, Waldbaur H, Seeling W. Spinal epidural abscess: A meta-
- analysis of 915 patients. Neurosurg Rev 2000;23:175-204; discussion 205. Darouiche RO, Hamill RJ, Greenberg SB, Weathers SW, Musher DM. Bacterial spinal epidural abscess. Review of 43 cases and literature survey. Medicine 6. (Baltimore)1992;71:369-85.
- 7. Arko IV L, Quach E, Nguyen V, Chang D, Sukul V, Kim BS, et al. Medical and And W L, Guden L, Nguyen V, Chang D, Jakar V, Kim BS, et al. Meatch and surgical management of spinal epidural abscess: a systematic review. Neurosurg Focus 2014;37:1–9. Quah CSL, Bilous R. Multiple spinal epidural abscesses: a diagnostic challenge in a person with newly diagnosed diabetes and neck and back
- 8.
- challenge in a person with newly alagnosed alabetes and neck and back pain. Pract Diabetes Int 2006;23:385–8. MD Parkins, DB Gregson. Community-acquired Serratia marcescens spinal epidural abscess in a patient without risk factors: Case report and review. Can J Infect Dis Med Microbiol 2008;19(3):250-252 9.