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CASE REPORT

Spondylodiscitis in childhood - case report in a preschooler

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Discitis,
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Abstract

Introduction: Spondylodiscitis in childhood is a condition that is difficult to diagnose, as it is uncommon and its symptoms are non-specific, corresponding to 2% to 4% of osteoarticular diseases in the pediatric age group. It presents with low back pain, refusal or difficulty in walking and/or sitting, associated or not with systemic symptoms. Among the most common microorganisms are viruses and bacteria, such as Staphylococcus aureus (65%-80%). **Case report:** Preschooler, male, Asian, with low back pain for 2 months, without associated trauma. The pain progressed 11 days before admission, associated with difficulty walking and sitting. Laboratory tests were performed, with elevated C-reactive protein (CRP) and 2 negative blood cultures, and imaging, with magnetic resonance imaging (MRI) of the lumbosacral spine showing signs of liquefaction of the L4-L5 intervertebral disc. Empirical treatment for Staphylococcus aureus with Oxacillin was started. There was an improvement in the clinical picture, returning to walking and sitting without difficulty, a drop in CRP <0.06 and MRI of the lumbosacral spine with a reduction in liquefaction of the L4-L5 intervertebral disc. **Conclusion:** Spondylodiscitis is a rare condition that affects approximately 1 in every 250,000 children. The diagnosis is made based on clinical history, generally frustrated, non-specific laboratory tests and imaging. Intravenous antibiotic therapy for 4 to 6 weeks is the mainstay of treatment, associated with immobilization and rest. Early diagnosis and treatment are essential to reduce the chances of long-term deformities.

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INTRODUCTION

Spondylodiscitis in the pediatric age group is rare, self-limiting, and difficult to diagnose. It mainly affects children from 6 months to 5 years of age but can extend into adolescence, with a higher incidence in boys (54.48%), according to the literature[1,2]. The incidence is 1 affected child per 250,000 children, accounting for 2 to 4% of osteoarticular diseases in the pediatric age group, and the average time from symptom onset to treatment ranges from 3 weeks to 3 months[1,3].

Symptoms are usually nonspecific and vary across age groups, but the most commonly reported are low back pain (37.97%) and difficulty walking and sitting (49.79%). In children under 3 years, refusal to walk (70%), irritability (13.92%), straight leg raise test positivity, spinal tenderness (50%), and abdominal pain (30%) are common, especially when thoracic intervertebral discs are affected. In patients aged 3 to 9 years, the main symptoms are low back pain (30%), refusal to walk (75%), and spinal tenderness (50%)[4]. Finally, in those over 9 years old, low back pain predominates. In addition, fever, refusal to eat, crying, limping gait, and antalgic posture may also be present.

Due to its nonspecific clinical presentation, spondylodiscitis often has a differential diagnosis with other causes of low back pain, including bacterial osteomyelitis, brucellosis, tuberculosis, localized form of Scheuermann's disease, neuroblastoma, leukemia, hip joint pathologies, and, in cases of abdominal pain, gastrointestinal or genitourinary infections[1,5].

The most prevalent pathogen is *Staphylococcus aureus*. However, infections caused by other pathogens have been reported, such as *Streptococcus pneumoniae*, coagulase-negative *Staphylococcus*, *Mycobacterium tuberculosis*, *Brucella* spp., and fungi in immunosuppressed patients[5]. According to the literature, there has been an increase in the incidence of infections caused by *Kingella kingae*, especially between 6 months and 4 years[4].

CASE REPORT

A 3-year-old Asian male preschooler, referred from Amparo, São Paulo, presented with low back pain for 2 months, without associated trauma. The condition had an abrupt onset, with no edema or local inflammatory signs, no weight loss, and no systemic signs or symptoms. Eleven days prior to hospitalization, the pain worsened, leading to difficulty walking and sitting. The patient denied loss of appetite and urinary habit changes but reported constipation due to difficulty sitting.

A lumbosacral spine CT scan performed at the referring facility showed irregularities and erosions in the L4 and L5 vertebrae, associated with enlargement of adjacent paravertebral soft tissues. Additional laboratory and imaging tests were performed. MRI of the lumbosacral spine revealed signs of liquefaction of the L4-L5 intervertebral disc with reduced disc space height and edema of the contiguous vertebral endplates, suggesting collection (IMAGE 1).

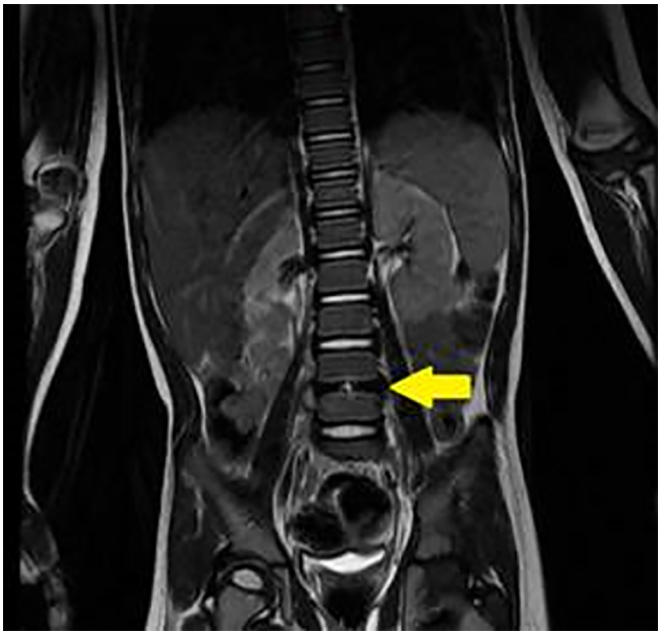


Figure 1. MRI showing signs of liquefaction of the L4-L5 intervertebral disc with reduced disc space height and edema of the contiguous vertebral endplates.

Laboratory tests revealed a complete blood count without abnormalities, elevated C-reactive protein at 1.88 mg/dl, and two negative blood cultures. Empirical treatment with Oxacillin (150 mg/kg/day) was initiated, considering *Staphylococcus aureus* infection, due to the impossibility of puncture and sample collection from the spine, since there was a small-volume collection located close to the aorta, posing a risk of vascular injury.

The patient showed clinical improvement, regaining the ability to walk and sit without difficulty after 1 month of treatment, with CRP decreasing to <0.06. Follow-up MRI of the lumbosacral spine showed reduced liquefaction of the L4-L5 intervertebral disc, persistent reduction of disc space height, and mild edema with contrast enhancement of the contiguous vertebral endplates (IMAGE 2).

The patient was discharged on oral Sulfamethoxazole-Trimethoprim (10 mg/kg/day) for 14 days and scheduled for follow-up with a general pediatrician.

DISCUSSION

This case report describes the history of a preschool child, with no prior medical history or triggering factors, presenting with low back pain for 2 months, which progressed to difficulty walking and sitting, prompting medical evaluation. The main findings in complementary tests were elevated CRP and vertebral erosions and irregularities, associated with signs of intervertebral disc liquefaction, consistent with the literature.

Low back pain in the pediatric age group can be difficult to diagnose due to the nonspecific nature of symptoms



Figure 2. MRI showing reduced liquefaction of the L4-L5 intervertebral disc after antibiotic therapy.

and tests, as well as the child's difficulty in explaining the clinical picture. Furthermore, the need to differentiate possible causes of back pain is what generates apprehension in pediatric practice.

Its pathophysiology occurs in three ways: hematogenous spread of infection, direct inoculation of the pathogen, and extension of infection into bone tissue[5]. Because children have intervertebral discs with rich blood supply, they are predisposed to the accumulation of infectious emboli, leading to direct infection and spread to adjacent tissues[2,3]. The most affected site is the lumbar spine, but thoracic and cervical regions may also be involved. It is classified as pyogenic (the most common), nonspecific granulomatous, specific granulomatous, and parasitic[1].

Risk factors include a history of viral or bacterial infections (13%), such as respiratory, gastrointestinal, acute otitis media, and urinary tract infections; trauma (6.32% in a systematic review)[4] with hematoma formation and vascular obstruction leading to infection. It usually occurs in otherwise healthy patients, as seen in this case, but conditions such as immunosuppression, diabetes, kidney failure, spinal surgery, and prematurity may also be associated[5].

Laboratory diagnostic tests are nonspecific, with elevated erythrocyte sedimentation rate and C-reactive protein, and blood cultures are usually negative[3], as in the case described. Imaging tests often show later changes, as exemplified by X-rays, but MRI is the most sensitive and specific exam[6]. MRI demonstrates findings ranging from narrowing of the intervertebral space to vertebral erosions, most often in the lumbar vertebrae L3-L4 and L4-L5, followed by thoracic involvement in 35% of cases. Additionally, it allows visualization of abscesses and collections, differentiation from vertebral osteomyelitis, and monitoring of treatment response[3,6]. Regarding puncture and biopsy of the affected site, these can guide antibiotic therapy but fail to identify the pathogen in 50% of patients.

Treatment approaches vary. There is greater agreement on a conservative approach, as carried out in this case, with empirical intravenous antibiotic therapy for *Staphylococcus aureus* for 4 to 6 weeks, after obtaining two blood cultures[7,8], along with immobilization to relieve symptoms. The main antibiotics used are third-generation cephalosporins and oxacillin, but there is still no consensus on which regimen to use and for how long[4]. Recommendations exist according to patient age and specific pathogen[6]. In cases of spondylodiscitis in children under 3 months, ceftriaxone, cefotaxime, oxacillin, and gentamicin are preferred, targeting likely pathogens; in those older than 3 months, oxacillin is preferred. If methicillin resistance is present, clindamycin should be added. In cases of infection by *Kingella kingae*, ceftriaxone combined with oxacillin is recommended[6,8]. Surgical intervention is not routine, being reserved for cases with paravertebral and parapharyngeal abscesses, psoas muscle abscesses, compressive radiculopathy, risk of progression to kyphosis, or bone deterioration with extensive vertebral body destruction[3,4].

The disease course is usually self-limiting, but sequelae may occur, such as persistent narrowing of the intervertebral space, development of epidural abscesses (4–38% of cases), chronic pain, scoliosis, kyphosis, and other spinal deformities. Follow-up is conducted with imaging, primarily MRI[1,4,5].

CONCLUSION

This study addresses spondylodiscitis in a preschool child, a rare disease that affects approximately 1 in every 250,000 children, difficult to diagnose in the pediatric age group and rarely discussed in practice. Its main symptom is low back pain, as shown in the case report, which may or may not be associated with previous infections or trauma. Due to its broad differential diagnosis, ranging from infections to neoplastic processes, understanding this condition is crucial for patient care.

Diagnosis is based on clinical history, which is often inconclusive, and imaging tests (MRI), which reveal abscesses, bone erosions, and narrowing of the intervertebral canal. Because of the possibility of long-term deformities, early diagnosis and treatment are essential. Therapy is performed

with intravenous antibiotic therapy, usually empirical, for 4 to 6 weeks, associated with immobilization and rest.

REFERÊNCIAS

1. Queiroz JWM, Pereira PCAA, Figueiredo EG. Espondilodiscite: revisão de literatura. Arq Bras Neurocir. 2013 Dec;32(4):230-6.
2. Fucs PMMB, Meves R, Yamada HH. Spinal infections in children: a review. International Orthopaedics. 2011 Oct 28;36(2):387-95.
3. Pissarra S, Fernandes AP, Neves J, Coelho D. Espondilodiscite na Criança. A propósito de Quatro Casos Clínicos. Acta Pediatr. 2004 Jan 1;35(5/6):495-501.
4. Ferri I, Ristori G, Lisi C, Galli L, Chiappini E. Characteristics, Management and Outcomes of Spondylodiscitis in Children: A Systematic Review. Antibiotics (Basel). 2020 Dec 31;10(1):30. DOI: https://doi.org/10.3390/antibiotics10010030.
5. Jasiewicz B, Helenius I. Tumors and infections of the growing spine. J Child Orthop [Internet]. 2023 Winter; [cited 2024 Jul 4]; 17(6):556-72. Available from: https://pubmed.ncbi.nlm.nih.gov/38050596/.
6. Nisa MM, Sousa J, Pimenta J, Antunes J, Gomes D, Faria C. Espondilodiscite em idade pediátrica - uma doença rara, um diagnóstico difícil. Sci Med. 2022 May 16;32(1):e41086.
7. Lorrot M, Gillet Y, Basmaci R, Bréhin C, Dommergues MA, Favier M, et al. L'antibiothérapie des infections ostéoarticulaires en 2023: propositions du Groupe de pathologie infectieuse pédiatrique (GPIP). J Pédiatr Puériculture [Internet]. 2024 Apr 24; [cited 2024 Jul 4]; 37(3):174-81. Available from: https://www.sciencedirect.com/science/article/abs/pii/S0987798324000537.
8. Alvares PA, Mimica MJ. Osteoarticular infections in pediatrics. J Pediatr (Rio J). 2020 Mar;96(Suppl 1):58-64.