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## Spinal Epidural Abscess Presenting with Abdominal Pain

### Abstract

We report a case of spinal epidural abscess presenting as abdominal pain. An 7-year-old boy presented with abdominal pain. He was operated on under suspicion of appendicitis. During operation, no abnormalities were found. Postoperatively, the abdominal pain did not subside. Subsequently, the boy developed neurological abnormalities. MRI showed a spinal epidural abscess. A laminectomy was performed and the boy was treated with antibiotics; he recovered well. This case showed that it is important to consider a spinal epidural abscess as a cause of abdominal pain with fever in children.

### Key words

Abdominal pain · Spinal epidural abscess

### Résumé

Nous rapportons un cas d'abcès spinal épidural se présentant comme une douleur abdominale. Un garçon de 8 ans s'est présenté avec une douleur abdominale. Il a été opéré pour suspicion d'appendicite. Durant l'opération, aucune anomalie n'a pas été trouvée. En post-opératoire, la douleur abdominale n'a pas persisté. En même temps, le garçon a développé des anomalies neurologiques. L'IRM a montré un abcès spinal épidural. Une laminectomie a été réalisée et le garçon traité par des antibiotiques a guéri. Ce cas montre qu'il est important de considérer l'abcès spinal épidural comme une cause de douleur abdominale avec fièvre chez l'enfant.

### Mots-clés

Douleurs abdominales · Abcès spinal

### Resumen

Presentamos un caso de absceso espinal epidural que se presentó como dolor abdominal en un niño de 7 años. Fue operado con sospecha de apendicitis y durante la operación no se encontraron anomalías. En el postoperatorio no cedió el dolor abdominal y más adelante el niño desarrolló anomalías neurológicas. La RNM mostró un absceso espinal epidural, por lo que se hizo una laminectomía y se trató al niño con antibióticos recuperándose bien. Este caso muestra que es importante considerar la posibilidad de un absceso epidural espinal como causa de dolor abdominal y fiebre en niños.

### Palabras clave

Dolor abdominal · Absceso peridural

### Zusammenfassung

Es wird der Fall eines 7 Jahre alten Knaben berichtet, der sich mit Bauchschmerzen wegen eines Epiduralabszesses des Rückenmarkes vorstellte. Das Kind wurde wegen Verdacht auf Appendizitis operiert. Bei der Laparotomie fanden sich jedoch keine pathologischen Veränderungen. Postoperativ wurde wegen fortbestehender Beschwerden und sich entwickelnder neurologischer Symptome ein MRI durchgeführt. Dies zeigt einen spinalen epiduralen Abszess. Es wurde eine Laminektomie vorgenommen

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und das Kind antibiotisch behandelt. Der postoperative Verlauf war unauffällig.

Der Fallbericht zeigt, wie wichtig es ist, auch epidurale Abszesse des Rückenmarkes in die Differenzialdiagnose der Appendizitis mit einzubeziehen.

## Schlüsselwörter

Epiduralabszess · Differenzialdiagnose Appendizitis

## Introduction

Spinal epidural abscesses are rare, especially in children. The outcome can be severe: neurological compromise, even death. Therefore, it is important to treat the patients urgently with surgical intervention and antibiotics. Diagnosis can be delayed when the patient presents with abdominal pain as the main symptom.

## Case Report

A seven-year-old, previously healthy, boy was referred to the pediatrician because of fever, anorexia, and colicky abdominal pain. The slightly ill boy weighed 24 kilograms, and had a temperature of 38.8°C, a pulse of 100 per minute, and a blood pressure of 100/60 mm Hg. The abdomen was not distended and auscultation revealed no abnormalities. There was generalized tenderness, but no guarding. Liver and spleen were not enlarged and rectal examination was painless. No other abnormalities were found during physical examination, especially no painful vertebrae. Laboratory tests showed a C-reactive protein concentration of 106 mmol/l, an erythrocyte sedimentation rate of 36 mm in the first hour, and  $13,2 \times 10^9/l$  leukocytes with a normal differentiation. Because the boy suffered from abdominal tenderness, an ultrasound could not be performed.

The next day the boy still had abdominal pain; his temperature dropped to 37.8°C. An abdominal computed tomogram (CT) revealed distended bowels and a slightly thickened wall, which could be described as an inflamed appendix. There was no free air nor extraintestinal fluid. The kidneys, the spinal cord, and the psoas muscle were normal.

Because of the CT findings, the laboratory abnormalities, and the patient's illness, a laparotomy through a transverse right lower quadrant incision was performed. It revealed a normal appendix, no Meckel's diverticulum, nor any other abnormality. The symptoms were attributed to gastroenteritis.

Postoperatively, the boy still had abdominal pain but no fever. On the third postoperative day he complained of headache, back pain, and a strange tingling feeling in his left foot and leg. There was muscular weakness in his left leg; he was not able to lift his leg against gravity. There were normal reflexes of the lower extremities except a plantar Babinski reflex on both sides; the sensitivity to pain was diminished in both legs, and there was sensory loss at the level of T11. Magnetic resonance imaging (MRI) showed a spinal abscess extending from the 3rd to the 7th thoracic vertebra (Figs. 1, 2).

A laminectomy was performed and a large abscess was drained. Tobramycin and flucloxacillin were started. After two days, bac-

teriological culture revealed group A streptococci, and the antibiotics were switched to penicillin. No primary focus was found.

The boy recovered well. Nine days after the laminectomy, the sensitivity and most of the muscle strength in the lower extremities were back to normal. The abdominal complaints had disappeared. After four weeks he was discharged. However, he had not yet regained full strength of the proximal left leg, and there was still a Babinski sign.

## Discussion

The incidence of spinal epidural abscesses is about 1 in 10,000 admissions, with an increase in recent years (2,5). Only a minority of the patients are children (7). Risk factors for getting a spinal epidural abscess are intravenous drug abuse, diabetes mellitus, and spinal surgery or spinal invasive procedures (2,5,7).

The most consistent features of spinal epidural abscesses are back pain, root pain, progressive neurological deficit, and low-grade fever (1,2,7). In children, however, the clinical picture is often not specific; they present with fever and irritability, often followed by back pain, weakness, and paralysis after some days (8). The combination of fever and back pain in children, however, points to the possibility of a spinal epidural abscess (6). MRI is the imaging modality of choice (2,5,6).

In our patient, abdominal pain dominated the picture, but there was no spinal tenderness. Headache and sensory disturbances did not develop until after the first operation.



Fig. 1 A sagittal, contrast-enhanced T<sub>1</sub>-weighted SE image shows the spinal epidural abscess, indicated with black arrows, extending from the 3rd to the 7th thoracic vertebra.



Fig. 2 An axial, contrast-enhanced T<sub>1</sub>-weighted image at the level of the 5th vertebra shows the abscess, indicated with a black arrow, at the dorsal side of the spinal cord.

It is known that a process in the spine can cause colicky abdominal pain, but after the disappearance of *tabes dorsalis* it is seen much less (1,4). Root pain in lesions between the eighth and twelfth thoracic segments can be felt on the surface or within the abdominal cavity (4), as was the case in our patient.

A spinal epidural abscess is a severe disorder: a review in 1994 reported a 12% mortality rate in children (3), which compares to that in adults (2,7). Outcome depends on the neurological compromise before surgery, which makes early diagnosis and urgent surgical treatment important. There is an agreement in the literature that immediate surgical decompression combined with antibiotic therapy is the treatment of choice (2,5–8). Antibiotics are started empirically, and if necessary switched after identification of the infectious agent by operative or blood cultures.

*Staphylococcus aureus* is the causative organism in more than 50% of cases (2,5–8). Group A streptococci, as in the presenting case, are seldom encountered. When there is no clear local cause for a spinal epidural abscess, hematogenous spread of the causative organism from a distant site should be considered, especially in children (6,8). Skin, ear, nose, and throat are the most common sites. In the case presented here, a primary focus was not found.

In children, abdominal pain is a frequent presenting symptom, even when there is no intraabdominal pathology. Although rare, one should consider a spinal epidural abscess in the differential diagnosis. As shown by our case, it could otherwise lead to unnecessary interventions and delay in treatment, which could cause severe complications.

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