CASE REPORT

Low back pain at presentation in a newly diagnosed diabetic

S Ladhani, S D Phillips, J Allgrove

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Insulin dependent diabetes mellitus predisposes to a range of different and unusual infections, including epidural and psoas abscesses. However, they occur mainly in adults with longstanding diabetes. We report the case of a 12 year old boy who presented with diabetic ketoacidosis and low back pain, and was subsequently diagnosed with both a left psoas abscess and an extensive thoracolumbar spinal epidural abscess measuring 20 cm in length. This case report highlights the need to maintain a high index of suspicion for epidural abscesses in children presenting with fever and localised back pain. Early diagnosis with appropriate imaging and aggressive management can prevent development of permanent neurological damage as was the case in our patient.

Patients with insulin dependent diabetes mellitus (IDDM) are generally more susceptible to infections, which can cause hyperglycaemia and trigger diabetic ketoacidosis.¹ In many cases, the focus of infection, such as the urinary or respiratory tract, may be apparent at presentation. Occasionally, however, patients can present with unusual foci of infection and vague clinical symptoms and signs. Both epidural^{2–5} and psoas^{6,7} abscesses have been reported in diabetics, but mainly in adults with longstanding disease. Presentation with an epidural abscess and psoas abscess in the same patient is extremely rare in adults, particularly at first presentation of IDDM,² and, to our knowledge, has not been reported in children.

CASE REPORT

A 12 year old boy of mixed race (White/Afro-Caribbean) presented to casualty with a three day history of central abdominal pain, vomiting, lethargy, and low back pain, followed by a five hour history of difficulty in breathing. There was no previous history of respiratory problems, polyuria, polydipsia, or weight loss. His past medical history was unremarkable with normal development and no previous acute hospital admissions.

On examination, he was 10% dehydrated with cold peripheries, dry mucous membranes, sunken eyes, and reduced skin turgor. He had Kussmaul breathing, with a respiratory rate of 60 breaths per minute, but good bilateral air entry on auscultation and no wheeze or crackles. There was no lymphadenopathy but he was noted to be anaemic. Axillary temperature was 36.0°C on admission. His heart rate was regular at 120 per minute with a blood pressure of 130/70 mm Hg. He had mild central abdominal pain with no hepatosplenomegaly. Examination of the spine revealed mild tenderness on palpation over the upper lumbar spine, but peripheral neurological examination was entirely normal.

Initial investigations showed a blood glucose of 30.4 mmol/l, haemoglobin 75 g/l with a raised glycated haemoglobin of 14.5%, white cell count $32.9 \times 10^9/l$ with a

Figure 1 Sagittal magnetic resonance image of the lower thoracic, lumbar, and upper sacral spine with gadolinium contrast showing extensive loculated epidural abscesses (arrowed) extending from the T10/11 disc space to S1.

neutrophilia of $27.3 \times 10^9/l$, sodium 133 mmol/l, potassium 3.1 mmol/l, urea 9.2 mmol/l, creatinine 141 $\mu\text{mol/l}$, and erythrocyte sedimentation rate 114 mm in the first hour. Haemoglobin electrophoresis was negative for sickle cell disease or trait. A venous blood gas on admission showed a pH of 7.08, pCO_2 1.3 kPa, standard bicarbonate 2.7 mmol/l, and base excess of -26.1 mmol/l. Urine dipstick showed glucose 3+, blood 3+, ketones 4+, and a trace of protein. The chest radiograph was clear.

A diagnosis of diabetic ketoacidosis was made; he was resuscitated with normal saline and commenced on intravenous fluids with added potassium and an insulin infusion according to the local protocol. His dehydration was corrected slowly over 48 hours. Intravenous cefotaxime was commenced to treat suspected infection based on the high neutrophil count and erythrocyte sedimentation rate (ESR), although no focus was identified at the time.

Abbreviations: ESR, erythrocyte sedimentation rate; IDDM, insulin dependent diabetes mellitus; MRI, magnetic resonance imaging; SEA, spinal epidural abscess

The occurrence of both a psoas abscess and SEA in the same patient is extremely uncommon. The recent systematic review identified only four cases in adults² and an extensive literature search revealed no reported cases in children. In particular, such an unusual and severe staphylococcal infection at presentation of IDDM has never been reported. This case report highlights the need for clinicians to maintain a high index of suspicion for early symptoms and signs of SEA.⁴ Children presenting with fever and localised back pain should be thoroughly investigated with appropriate imaging because early diagnosis and effective treatment can prevent the development of permanent neurological damage in those with epidural abscesses, as was the case in our patient.

Authors' affiliations

S Ladhani, S D Phillips, J Allgrove, East London Centre for Paediatric and Adolescent Diabetes at Royal London Hospital, Whitechapel E1 1BB, and Newham General Hospital, Glen Road, Plaistow E13 8SL, UK

Correspondence to: Dr S Ladhani, Department of Paediatrics, Newham General Hospital, Glen Road, Plaistow E13 8SL, UK; DrShamez@aol.com

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REFERENCES

- 1 **Joshi N**, Caputo GM, Weitekamp MR, *et al.* Infections in patients with diabetes mellitus. *N Engl J Med* 1999;**341**:1906–12.
- 2 **Reihnsaus E**, Waldbaur H, Seeling W. Spinal epidural abscess: a meta-analysis of 915 patients. *Neurosurg Rev* 2000;**23**:175–204.
- 3 **Rigamonti D**, Liem L, Sampath P, *et al.* Spinal epidural abscess: contemporary trends in etiology, evaluation and management. *Surg Neurol* 1999;**52**:189–96.
- 4 **Baldwin N**, Scott AR, Heller SR, *et al.* Vertebral and paravertebral sepsis in diabetes: an easily missed cause of backache. *Diabet Med* 1985;**2**:395–7.
- 5 **Hlavín ML**, Kaminsky HJ, Ross JS, *et al.* Spinal epidural abscess: a ten-year perspective. *Neurosurgery* 1990;**27**:177–84.
- 6 **Kao PF**, Tsui KH, Leu HS, *et al.* Diagnosis and treatment of pyogenic psoas abscess in diabetic patients: usefulness of computed tomography and gallium-67 scanning. *Urology* 2001;**57**:246–51.
- 7 **Huang JJ**, Ruaan MK, Lan RR, *et al.* Acute pyogenic iliopsoas abscess in Taiwan: clinical features, diagnosis, treatments and outcome. *J Infect* 2000;**40**:248–55.
- 8 **Sage RA**, Miller JM, Stuck R, *et al.* The foot as a primary site for distant metastatic infection. *J Foot Ankle Surg* 1994;**33**:567–71.
- 9 **Ripoll Maías MM**, Gomez-Cerezo J, Alba Martín D, *et al.* Primary psoas abscess and epidural abscess by *Staphylococcus aureus*. *Ann Med Intern* 1999;**16**:266.
- 10 **Lin MF**, Lau YJ, Hu BS, *et al.* Pyogenic psoas abscess: analysis of 27 cases. *J Microbiol Immunol Infect* 1999;**32**:261–8.

IMAGES IN PAEDIATRICS

Coughing up a lung

A 10 year old girl presented with a harsh “barky” cough which resolved with sleep. Physical examination revealed lungs clear to auscultation, no cervical crepitus or other neck deformities. An upper gastrointestinal series was performed to investigate whether gastro-oesophageal reflux was causative. During a Valsalva manoeuvre the radiographs revealed a lucency in the neck on the right, representing herniation of a portion of the right lung (see figure). There was mass effect on the trachea with shift to the left.

Lung hernias, uncommon occurrences in children, can be classified using the system devised by Movall-Lovallée. Congenital versus acquired hernias describes the defect based on aetiology. Cervical thoracic versus diaphragmatic lung hernias describes the defect based on location.¹

Congenital hernias are more common in children than acquired hernias and are primarily the result of weakness in Sibson’s fascia.¹ Sibson’s fascia is a continuation of the endothoracic fascia over the apex of the lung inserting posteriorly onto the transverse process of the first thoracic vertebra and ramifying anterolaterally around the margins of the first rib.^{1,2} The herniation may present throughout infancy and childhood, usually as a painless mass in the neck exacerbated by events increasing intra-abdominal pressure.^{1,3} Apical lung hernias are more common on the right.³

Treatment of apical lung hernias is seldom necessary because they spontaneously reduce with decreasing intra-abdominal pressure.⁴ This patient was diagnosed with a psychogenic cough that responded well to behavioural modification therapy.

**K Hightower
J E Teitelbaum**

Department of Paediatrics, Monmouth Medical Center,
300 Second Avenue, Long Branch, NJ 07740, USA; jteitelbaum@sbhcs.com

References

- 1 **Bronsther B**, Coryllos E, Epstein B. Lung hernias in children. *J Pediatr Surg* 1968;**3**:544–50.
- 2 **McAdams HP**, Gordon DS, White CS. Apical lung hernia, radiologic findings in six cases. *AJR* 1996;**167**:927–30.
- 3 **Maurer E**, Blades B. Hernia of the lung. *J Thorac Surg* 1946;**15**:77–98.
- 4 **Bhalla M**, Leitman BS, Forcade C, *et al.* Lung hernia: radiographic features. *AJR* 1990;**154**:51–3.