Recognising and treating discitis

ANGUS J. GRAY MB BS, FRACS(Orth)

Discitis is usually straightforward to treat but difficult to diagnose. It should always be considered in a patient with acute back pain in the presence of fever or malaise.

Disc space infection (pyogenic infectious spondylitis) is an uncommon condition characterised by delayed diagnosis; 50% of adult patients have symptoms for three months beforehand. Symptoms are variable – particularly in children – and signs may be nonspecific. For these reasons, discitis should always be considered in cases of acute back pain in the presence of fever or malaise.

Pyogenic infectious spondylitis represents 0.15 to 3.9% of all osteomyelitic infections. The lumbar spine is the usual site involved. Adults are affected more frequently than children, and males more often than females. Those who are particularly at risk are:

- elderly or immunocompromised individuals, especially after a urinary tract infection
- patients with diabetes (18 to 25% of cases)
- patients who have had a recent genitourinary or invasive spinal procedure.

Dr Gray is a Staff Specialist, Sydney Children's Hospital, and a Visiting Medical Officer, Prince of Wales Private and Mater Misericordiae Hospitals, Sydney.
Series Editor: Dr John P.H. Stephen, FRCS, FRACS, a Visiting Medical Officer (Orthopaedics), Prince of Wales, Sydney Children's and Mater Misericordiae Hospitals, Sydney, NSW.

Organisms

Staphylococcus aureus is the most common infecting organism, and is found in up to 60% of cases. *Escherichia coli* and *Proteus* and *Pseudomonas* species are often associated with disc space infection after genitourinary procedures and in immunodeficient patients; *Pseudomonas* infections are also associated with intravenous drug use.

Other causative organisms that are less common include *Staphylococcus epidermidis*, *Streptococcus pyogenes* and other skin flora. *Aspergillus*, *Brucella* and *Mycobacterium tuberculosis* can also infect the disc space; however, these are special cases and will not be discussed further in this article. (Tuberculosis of the spine was covered in an earlier article in *Medicine Today*.[1])

Pathogenesis

In the immature skeleton, the superior and inferior ends of the vertebral bodies are capped with cartilaginous endplates perforated with vascular channels that extend a variable distance into the disc. In adults, the cartilage endplates ossify and the channels disappear. Current theories propose that bacteria carried in the bloodstream lodge in the hyaline endplate of the immature spine or the subchondral bone of the adult vertebra; from there, the infection rapidly progresses into the disc space and opposite vertebra. Infection secondary to direct inoculation (such as after a discogram) starts in the disc space and spreads outwards.

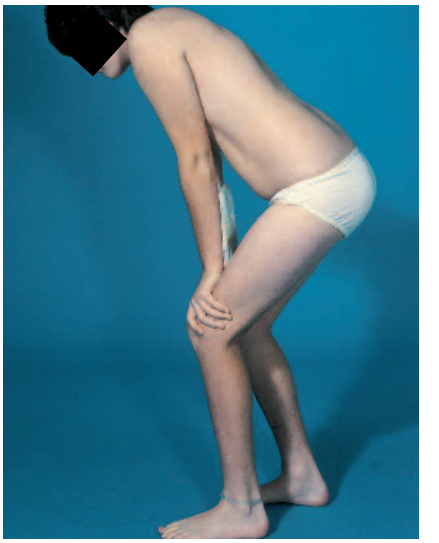

Figure 1. The typical posture of a patient with longstanding discitis. The lumbar spine is splinted in this position by the hands placed on the thighs.

Figure 2 (left). A radiograph showing L3–L4 discitis (arrow) with endplate erosion and loss of disc height.
Figure 3 (above). A bone scan showing intense osteoblastic activity in the disc space and adjacent vertebral bodies.

Discitis in children and adolescents

Presentation

The average age of onset in children is 6 to 7 years, and they may present as having only abdominal pain and a low grade fever. The first sign in a younger child may be a sudden refusal to walk that can be alarming to the parents. In teenagers, the symptoms are usually more localised to the spine.

On examination, lumbar flexion is limited and hamstring spasm is common. A patient may walk with his or her hands on the thighs to limit spinal movement (see Figure 1). Local tenderness can be minimal. Neurological signs are rare but ominous if present – they might herald an epidural abscess compressing the spinal cord or cauda equina. Epidural abscess is more common in adults and infection involving the thoracic or cervical spine.

Investigations

Radiographs will appear normal if they are taken early: disc space narrowing and endplate destruction, which are visible in Figure 2, take several weeks to manifest. An elevated erythrocyte sedimentation rate (ESR) and C reactive protein level are usually the only abnormalities found on blood tests. Blood cultures are positive in only 50% of cases (lower in afebrile patients).

Bone scanning (Figure 3) and MRI are the most sensitive noninvasive investigations for discitis, and will also assist in excluding sacroiliitis, neoplasms, genitourinary problems, Scheuermann's kyphosis, spinal epidural abscess, and atypical infection. Occasionally, a needle or open biopsy will be needed if the diagnosis remains uncertain.

Management

Treatment consists of appropriate intravenous antibiotics. If cultures are negative, the patient is given flucloxacillin (Flopen Powder for Injection, Flucil, Flucloxacillin Sodium for Injection) or a first generation cephalosporin. These are administered until symptoms improve and the laboratory values are returning to normal (usually less than a week); oral antibiotics are then continued for four to six weeks. A brace or custom moulded orthosis is occasionally required for comfort. Failure of response to intravenous antibiotics may necessitate surgical drainage.

All patients should be followed up for at least one year. The disc space usually remains narrowed. It can reconstitute, especially in a younger child, but spontaneous fusion may be the late result in the adolescent.

Discitis in adults

Presentation

In adults, focal back pain is the most usual symptom. Fever, general malaise and radicular symptoms can also occur. Examination may reveal only limited back motion and a positive straight leg raise. Neurological deficits are uncommon but should alert the clinician to a possible epidural abscess – urgent referral to a spinal surgeon is recommended in these instances. Typically, however, the signs are nonspecific.

Investigations

Radiographs will remain normal for two to four weeks after the onset of symptoms. The presence of an elevated ESR and C reactive protein should raise suspicions, and a bone scan or MRI should be arranged. Blood cultures are necessary, but the yield will not be high.

Bacterial endocarditis has been reported in association with discitis, particularly in patients with valvular heart disease. Therefore, signs of bacterial endocarditis should be sought and, if present, a cardiac echogram arranged.

Management

Treatment relies on appropriate intravenous antibiotics. The recommended duration is one to six weeks, and the patient is kept on bed rest until clinical improvement occurs. This is followed by oral antibiotics for another eight to 16 weeks. Braces are recommended in most cases and need to be worn for three to four months.

Outcome

Of all patients, children and adults, 75% respond successfully to nonoperative management. However, surgical intervention is required for:

- an uncertain diagnosis
- failed antibiotic therapy
- symptomatic spinal cord or nerve root compression
- correcting or preventing deformity
- managing severe, persistent pain.

Summary

Discitis is usually straightforward to treat but difficult to diagnose. The adult patient presenting with significant back pain, fever and laboratory evidence of an inflammatory process should generate a high index of suspicion. In children, the clinical signs may be even less specific. Radiographs should be performed, but the classic appearance may not appear for up to four weeks. Therefore, an early bone scan or MRI is recommended to minimise the chance of delayed diagnosis. MT

References

1. Gray A, Gottlieb T. A 68-year-old woman with signs of spinal tuberculosis. Medicine Today 2000; 1(2): 105-107.

Further reading

1. Ozuna RM, Delamarter RB. Pyogenic vertebral osteomyelitis and postsurgical disc space infections. Orthop Clin North Am 1996; 27: 87-94.

2. Morelli S, Carmenini E, Caporossi AP, Aguglia G, Bernardo ML, Gurgo AM. Spondylodiscitis and infective endocarditis: case studies and review of the literature. Spine 2001; 26: 499-500.

3. Wenger DR, Ring D, Hahn GV. Pyogenic infectious spondylitis in children. In: Weinstein SL, ed. Pediatric spine: principles and practice. 2nd ed. Lippincott Williams & Wilkins, 2001.