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Juvenile discitis

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SUMMARY Over a period of three years four girls and two boys presented with discitis. All were less than 5 years old at presentation, and each had a short history of symptoms. Three were initially thought to have pathological defects of the abdomen. All children showed abnormal posturing with exaggerated lumbar lordosis. Diagnosis was essentially clinical. All cultures were sterile. The erythrocyte sedimentation rate was increased in all the children and all had mild pyrexia. Symptoms lasted from two to 8 weeks. Discitis should be considered in any child with fever, abnormal posturing, and refusal to walk. Early recognition may avoid unnecessary diagnostic and treatment procedures.

Juvenile discitis is a self limiting inflammation of the intervertebral disc space. It may be caused by low grade viral or bacterial infection. Diagnosis of discitis is difficult as it may mimic other diseases such as septic arthritis, appendicitis, meningitis, or vertebral osteomyelitis. Symptoms may even be thought to have an emotional basis. Misdiagnosis may lead to unnecessary diagnostic and treatment procedures. We report on 6 children with juvenile discitis.

Patients, presentation, and methods

Six children, whose ages ranged from 7 months–4 years 10 months, presented with juvenile discitis over the three year period 1980–2. Four were girls and two were boys. The mean duration of symptoms before presentation was two and a half weeks (Table 1). Irritability was the predominant symptom in all children, and five were refusing to walk or sit up. Three children presented to a surgical unit. Two were thought to have urinary tract infection because of flank pain. One had bowel distension and was initially thought to have appendicitis. None of the children had a history of previous illness.

On examination the most striking feature in all children was exaggeration of the normal lumbar lordosis leading to bizarre posturing. One child also had mild scoliosis. The most unusual posture was that of a 15 month old girl who lay prone with her buttocks raised in a knee to chest position that increased her lumbar lordosis (Fig. 1). Tenderness was present on palpation of the lumbar spine. Five children were pyrexial with maximum temperature 38·3°C.

Investigations. The erythrocyte sedimentation rate, which was the only confirmation of inflammation, was raised on admission in all children (Table 2). Total and differential white cell counts were normal. There was no evidence of systemic bacterial infection. Antibody titres against staphylococci, streptococci, brucella, and salmonellas were negative in the four children in whom they were performed Radiographs of the lumbar sacral spine showed narrowing of the affected disc space in all cases with sclerosis and irregularity of the adjacent vertebral end plates (Fig. 2). Four children underwent 99 m Technetium methylene diphosphonate (MDP) isotope scans, that showed increased uptake at the

Table 1 *Clinical features at presentation*

Case No	*Age*	*Sex*	*Duration of symptoms*	*Temperature (°C)*	*Initial diagnosis*
1	7 months	M	4 weeks	38·0	Vertebral osteomyelitis
2	1 year, 2 months	F	4 days	37·0	Muscle spasm
3	1 year, 3 months	F	1 week	38·0	Vertebral osteomyelitis
4	1 year, 4 months	M	2 weeks	37·8	Urinary tract infection
5	2 years, 3 months	F	5 days	38·3	Appendicitis
6	4 years, 10 months	F	5 weeks	37·2	Urinary tract infection

site of inflammation (Fig. 3). Two children underwent closed disc biopsy done under general anaesthetic with image intensification. A Howard-Johnson needle was used. Free aspirate was not obtained, and cultures of disc space washings were negative. Histological findings confirmed the diagnosis of non-specific inflammatory discitis.

Treatment. In view of the possibly infective nature of the disc lesions, five children received anti-staphylococcal treatment for varying periods (Table 2), although cultures were negative. All children were initially treated with rest in bed; two were placed in plaster jackets to render them immobilised. Analgesics were prescribed as required.

Results

Symptoms resolved within two months in all patients. After discharge from hospital repeat radiographs showed persisting changes in the bone (Table 2). The interval between repeat radiographs was variable and dependent on the clinical course and initial severity of the radiographic lesion. Three children showed only narrowing of the disc space, but three others showed both narrowing and irregularity

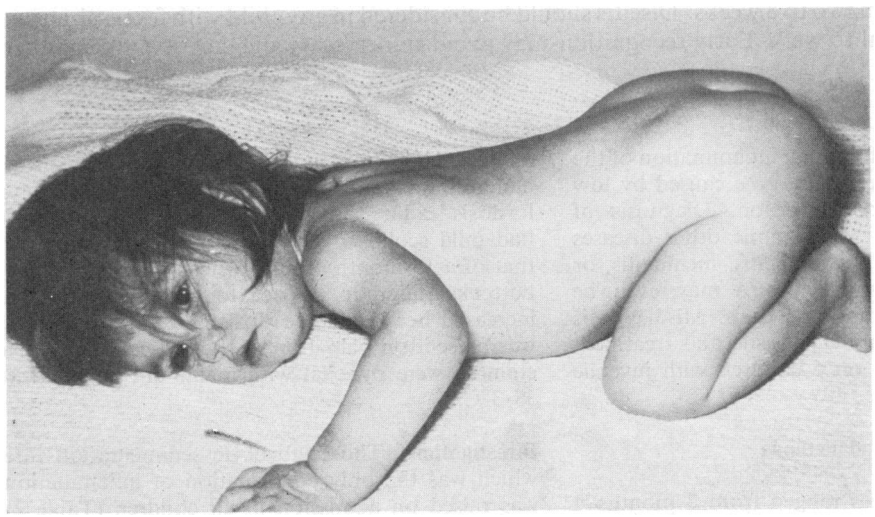

Fig. 1 *A 15 month old girl with discitis showing exaggeration of normal lumbar lordosis by adaptation of knee to chest position.*

Table 2 *Investigation and treatment in 6 patients*

Case No	*Erythrocyte sedimentation rate (mm in first hour)*	*Disc space affected*	*Technetium 99 m scan*	*Antibiotics given*	*Duration of treatment with antibiotics (weeks)*	*Resolution of symptoms (weeks)*	*Subsequent radiological findings*	*Time since presentation (months)*
1	67	L4–5	Increased uptake	Flucloxacillin	6	8	Notable narrowing and irregularity of disc space	15
2	42	L2–3	Increased uptake	Flucloxacillin, ampicillin	12	6	Narrowing of disc space	7
3	53	L4–5		Flucloxacillin, cefuroxime	6	6	Narrowing of disc space	2
4	25	L4–5		Flucloxacillin, fusidic acid	6	6	Narrowing and irregularity of disc space	28
5	38	L4–5	Increased uptake	Flucloxacillin, erythromycin	6	2	Narrowing of disc space	5
6	52	L3–4	Increased uptake			8	Narrowing of disc space with slight irregularity	10

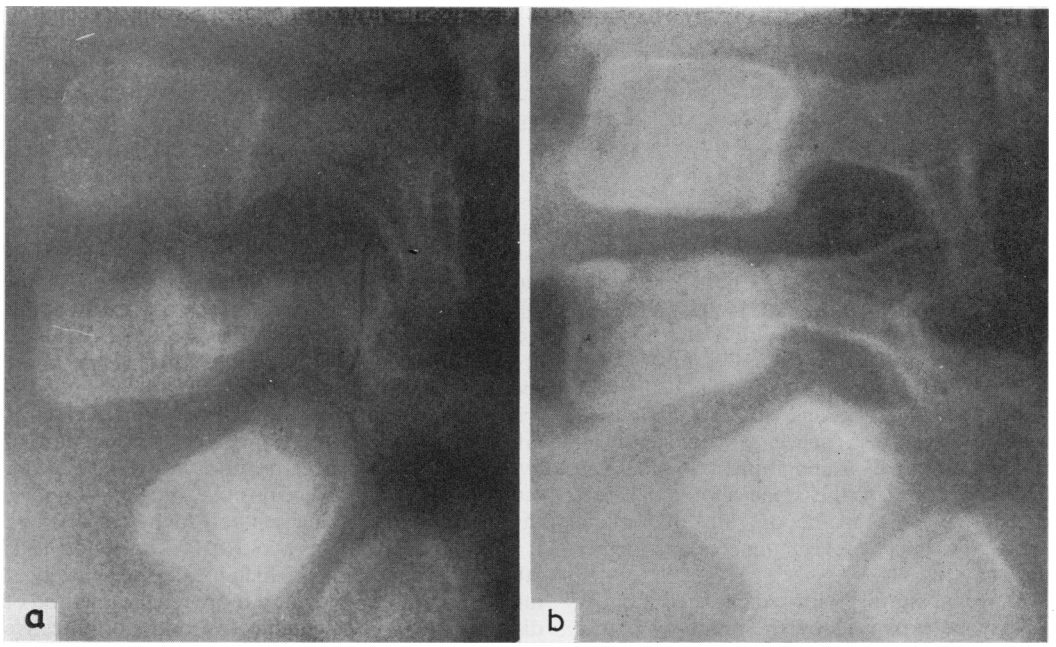

Fig. 2(a) *Computed tomogram of lumbar spine. L4–5 disc space is narrow with erosion of vertebral end plates and some sclerosis of L5.* (b) *Radiograph of lumbar spine five months after onset of symptoms. There is still loss of disc height but irregularity has resolved. This is from one of two patients who had a needle biopsy.*

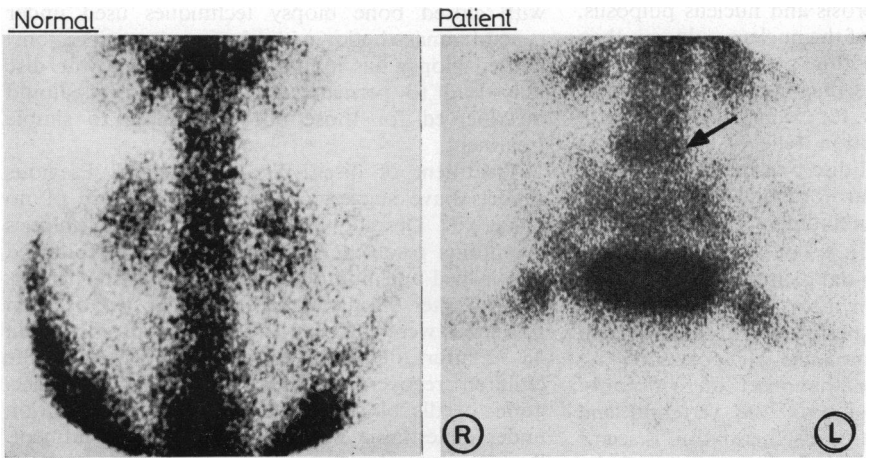

Fig. 3 *Posterior view of isotope scan of lumbar spine. Increase in uptake is visible at L4–5, the site of the lesion (←), which contrasts with normal appearances.*

of the adjacent vertebral bodies (Fig. 2). This was most pronounced in one of the patients who underwent bone biopsy.

Discussion

Discitis in young children may go undetected. It has been described in an orthopaedic report[1] but few cases have been reported in paediatric journals.[2 3] An infective agent has not been identified, but it has been postulated that staphylococcal infection may be present.[1–3] A recent review concluded that discitis was a common end process

produced by a number of agents of low virulence that are eventually cleared by the body's defence mechanisms.[4] Local trauma has been implicated as an initiating factor in the disease but there are insufficient data to support this hypothesis.[1] In the present series only one child had a history of trauma. This child presented after a fall one week before onset of symptoms.

Discitis commonly presents in children less than 5 years of age.[2] Girls are affected more often than boys in a ratio of two to one. Characteristically symptoms are of short duration. Unless a strong suspicion prompts careful examination of the spine, the symptoms and physical signs may be misleading. Three children in this series were initially thought to have pathological defects of the abdomen. Narrowing of the disc space was evident on the initial abdominal radiographs emphasising that careful scrutiny of the spine should be part of the routine assessment of all abdominal radiographs. This may prevent unnecessary further investigation.

The bizarre posturing with exaggerated lumbar lordosis may be explained by the anatomy of the spine: the vertebral column is not straight but has a concavity forwards in the thoracic and upper lumbar vertebrae and lordosis in the lower lumbar region. The intervertebral discs have two components, the annulus fibrosis and nucleus pulposus. If there is inflammation of the nucleus pulposus then clearly compression of this softer tissue by the adjacent vertebral bodies may cause pain. Increase in the normal lordosis by, for example, adaptation of the knee to chest position relieves some of the pressure on the inflamed disc by expanding the disc space. Decreased lumbar lordosis, kyphosis, and scoliosis are less common findings.[1]

The radiological features of discitis follow a standard pattern. The initial picture may be normal depending on how soon after presentation radiographic examination is performed. Loss of height of the disc, often accompanied by local scoliosis, begins 10–14 days after the onset of symptoms. This progresses to erosion of the vertebral end plates. In more severe cases disc herniation is seen.[3] Once repair takes place there is sclerosis of the vertebral end plates with gradual recovery of disc height, although this may not return to normal. Three quarters of all cases are in the lumbar spine. Radiologically, the picture is very similar to frank pyogenic spondylitis and may be indistinguishable. The destructive process in pyogenic spondylitis is usually more rapid and paravertebral abscesses may form. Neurological signs are also commoner in infective lesions. Juvenile discitis differs from calcific discitis in that the latter usually affects the cervical spine, although the thoracic or lumbar region may be affected. Calcific discitis develops in older children and does not cause vertebral irregularity.

It is difficult to distinguish between pyogenic and non-specific inflammatory spondylitis. In both discitis and vertebral osteomyelitis irritability, back pain, and fever may be present. In vertebral osteomyelitis there is usually systemic illness and there may be a pyogenic focus elsewhere. Radiological findings, as stated, may not be helpful. Isotope scanning with 99 m Technetium MDP will, in general, be positive in both pyogenic and non-specific inflammatory spondylitis; it is not discriminatory. Scanning with gallium citrate, which is taken up by infective lesions, may be positive in pyogenic cases and negative in discitis. The gallium scan however, will not be positive until 36–48 hours, the radiation dose is unacceptably high in infants and it should therefore be avoided. White blood cells labelled with indium^{111}, which localise specifically at infected sites, may provide a more reliable method of discriminating between infective and non-infective lesions in the future.[5]

The definitive diagnosis is by biopsy, which can be either open or closed. Open biopsy is a major procedure. Satisfactory results may be obtained with closed bone biopsy techniques used under general anaesthetic with image intensification.[4] Closed biopsy has its hazards. Trauma to the disc may lead to permanent damage. Biopsy should be reserved for those not responding to simple treatment.

Treatment of discitis is controversial. Previous reports have suggested that antibiotics are of no value.[1-3 6] Despite varying courses of antibiotics symptoms resolved in all our patients. Prolonged rest in bed and immobilisation with plaster jackets did not alter the disease process.[4] Most patients in this series were sufficiently free of symptoms within 48–72 hours of presentation to walk. Two of the children recovered normal posture after undergoing needle biopsy, suggesting that manipulation under anaesthesia may have a role in treatment. Biopsy may also have reduced pressure in the enclosed disc space relieving symptoms caused by disc compression.

Although the aetiology of juvenile discitis is unknown, the association of irritability, refusal to walk, and bizarre posturing with low grade fever in young children should suggest its presence. Diagnosis is essentially clinical, and awareness of the disease is crucial if unnecessary diagnostic and treatment procedures are to be avoided.

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Fifty years ago

Proceedings of the Sixth Annual General Meeting of the British Paediatric Association

Dr G F Still told the Association of the steps that had been taken to try to secure the provision of a special examination (that is a separate examination in paediatrics in the final examination for all students of medicine). The minutes record that 'Dr Still did not appear to be in the least hopeful of the outcome of his attempt'.

C H C Cameron, *The British Paediatric Association 1928–52*, British Paediatric Association 1955;**15.**

Frederick Still's name is known by many because of its association with 'a form of arthritis occurring in children' which was the title of Still's MD thesis at Cambridge University. He was the first President of the British Paediatric Association and the first paediatrician to be given a knighthood. This was partly in recognition of his services as a paediatrician to the Duke of York's children, the elder of whom became Queen Elizabeth II.

The medical schools outside London eventually led the way and introduced separate examinations in paediatrics. London, Oxford, and Cambridge still lag behind. Philip Evans.