Lesson of the Week

Spinal cord compression: remember osteoporosis

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We report two cases of collapse of a vertebral body with resulting compression of the spinal cord, which clinically and radiologically were diagnosed as being due to metastatic disease but at necropsy were found to be due to osteoporosis.

Case reports

CASE 1

A 79 year old man presented with a five day history of sacral back pain, weakness of his legs, numbness of his feet, and reduced frequency of micturition. He gave a seven year history of back pain punctuated by several acute episodes, all of which had resolved spontaneously. He had also had an episode of acute pancreatitis three years previously.

Examination showed leg weakness, which was more pronounced on the right side; reduced straight leg raising; and decreased coordination. Knee and ankle reflexes were absent on the right side and his perception of vibration and pinprick was diminished, but there was no definite sensory level. Perineal sensation and results of abdominal examination were normal. Blood investigations showed amylase activity 3190 IU/l (normal 70-300) and urea concentration 16.2 mmol/l. Radiological investigations included x ray films of the chest, pelvis, abdomen, and lumbosacral spine and a radiculogram (delineating the lumbar spine only); all of these were normal.

The next day he developed urinary retention, for which a catheter was inserted, and symptoms and signs of acute pancreatitis. Over the next few days the pancreatitis resolved but he developed flaccid paraplegia with a definite sensory loss below the level of T12. An x ray film of the dorsal spine showed collapse of the T11 vertebral body, which was reported as almost certainly due to metastatic disease. This was confirmed by an isotope bone scan.

He was treated conservatively but died four weeks later from faecal peritonitis due to a perforated sigmoid diverticulum. Necropsy showed a compression fracture of T11 with resulting compression of the spinal cord. Histological examination showed this to be caused by senile osteoporosis with no evidence of a tumour or osteomalacia.

CASE 2

A 91 year old man who had previously been well and totally independent presented with a 10 day history of low back pain and weakness of his legs. Relevant medical history included a prostatectomy four years previously.

Examination showed pronounced weakness of both legs, reduced tone bilaterally, and absent knee and ankle jerks on the right side, but sensation, vibration sense, and proprioception in the legs were normal. There was, however, loss of perineal sensation, reduced anal tone, and a palpable enlarged bladder at the level of the umbilicus. Initially a catheter was inserted and he was treated with analgesia. Urea concentration was 31.0 mmol/l; an x ray film of the lumbosacral spine showed a compression

Vertebral collapse causing compression of the spinal cord may rarely be due to osteoporosis

Myelogram in case 2 showing complete collapse of L1 with compression of spinal cord blocking passage of contrast above this level.

fracture of L1, and a myelogram (figure) supported this. There was no contrast above the level of L1, and the appearance of the cut off was consistent with an extradural block due to metastatic disease. As a result surgical decompression was not indicated, and he died the next day.

Necropsy showed a compression fracture of L1, with resultant compression of the spinal cord. Histological examination showed osteoporosis with extensive oedema, haemorrhage, and chronic inflammation but no evidence of a tumour.

Discussion

Osteoporosis is common in the elderly. Consequent vertebral collapse is an important cause of back pain, women being four times as likely to suffer from it as men. Despite this neurological

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complications are rare. Major textbooks and specialised books on osteoporosis either do not mention spinal cord compression as a complication of senile osteoporosis¹⁻³ or state that it is rare or does not occur.^{4,6} Thus one book states, "Nerve root compression is rare and spinal cord damage does not occur even in the presence of severe deformity"; another that, "Spinal cord compression does not occur and classical root pain is atypical"; while another does not completely exclude the possibility of paraplegia in stating that, "Radiation of pain down one leg is uncommon and symptoms or signs of spinal cord compression are very rare."⁴

There was both clinical and radiological support for the diagnosis of metastatic bone disease in both of our patients, with no other differential diagnosis being considered to be likely. Necropsy was expected to confirm this, but pathological and histological examination showed only osteoporosis in each case. It is interesting that both patients were men as the condition is rarer in men, but we cannot propose any explanation for this other than chance.

These two cases should alert physicians to the possibility of

osteoporotic vertebral collapse as a cause of spinal cord compression and encourage its mention in future editions of the relevant textbooks.

References

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Tuberculous spondylitis in the elderly: a potential diagnostic pitfall

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Despite an overall decrease in the incidence of tuberculosis within the United Kingdom infection with *Mycobacterium tuberculosis* remains an important cause of disease in the Asian immigrant and elderly white population and may be overlooked.¹ We describe two cases of tuberculous spondylitis in elderly patients that were attributed to malignant disease.

Case 1

A 76 year old retired pottery worker presented with a two month history of weight loss and low back pain. He had been investigated for possible pulmonary tuberculosis at the age of 30 and was receiving a pneumoconiosis pension because he had silicosis. Examination was unremarkable. Investigations showed iron deficiency anaemia and a raised erythrocyte sedimentation rate. Acid phosphatase activity, immunoglobulin concentrations, and results of a barium enema were normal. An x ray film of the thoracic spine showed partial collapse of the 12th thoracic vertebra, and a radioisotope bone scan showed increased uptake over the same site. Osteoporosis was diagnosed, and he was treated with a spinal support, analgesia, and oral iron.

He returned four months later complaining of a sudden increase in back pain associated with leg weakness, paraesthesia, and incontinence. On examination he had a lower thoracic gibbus and signs of spinal cord compression with a sensory level at L1 and paraplegia. An x ray film showed collapse of the 11th and 12th thoracic vertebrae with loss of the disc space (fig 1). A presumptive diagnosis of metastatic disease was made, and he was referred for radiotherapy but died before treatment was started. Postmortem examination showed tuberculous disease of the spine with an associated miliary infection.

Back pain and vertebral collapse in the elderly may indicate tuberculous spondylitis

Case 2

An 83 year old man underwent routine chest radiography before trans-urethral prostatectomy for benign prostatic hypertrophy. He was receiving a 40% pension because he had coal workers' pneumoconiosis. The x ray film showed a right hilar mass suggesting an underlying bronchial carcinoma. One month later he complained of back pain and was found to be noticeably tender over the lumbar spine. x Ray films showed collapse of the second and third lumbar vertebrae with anterior displacement of the aorta. He began a course of palliative radiotherapy for presumed metastatic disease secondary to a primary bronchial carcinoma, but further x ray film and computed tomography showed rapid destruction of the L2-3 disc and adjacent vertebral bodies, which suggested an infective rather than a neoplastic process (fig 2). Numerous biopsy specimens of the psoas area and lumbar spine were obtained. Coagulase negative staphylococcus was isolated from one culture, and he was treated with ampicillin. Tuberculous spondylitis was finally diagnosed when tubercle bacilli were isolated from culture of sputum. Antituberculous chemotherapy was started, and he subsequently made a good recovery.

Discussion

Tuberculous spondylitis accounts for 6% of all new cases of extrapulmonary tuberculosis notified each year within England and Wales.² In the elderly population most cases occur after reactivation of dormant foci in the lower thoracic, lumbar, and lumbosacral region; almost invariably adjacent vertebrae are affected. The most common form of presentation is pain over the affected vertebrae of a few weeks' to three years' duration, often associated with malaise, fever, and weight loss.³ Pressure on the spinal cord or nerve roots secondary to vertebral collapse or subluxation, or the presence of granulomatous masses or extradural abscesses, may produce a

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