Hydatid disease of the spine

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Spinal hydatid cyst was diagnosed in four patients, aged between 21 and 35 years, three male and one female between 1983 and 1993. In three patients, the cysts were epidural and in one intra-vertebral. All patients presented with symptoms of spinal cord compression. Surgical treatment was performed in all of the patients. One patient who relapsed showed evidence of cure after a second operation, and was given mebendazole (Vermox). Histological examination was performed in all of the patients.

Keywords: spinal disease; spinal paralysis; hydatid cysts; treatment

Introduction

Hydatid disease, in man, is the larval stage of *E granulosus*, a tapeworm for whom the definitive host is usually the dog.

Hydatid disease may be found in various sites in the human body and is localised in bone in about 1% of cases,^{1–4} half of these in the spine.^{2–6} Spinal hydatid disease usually occurs as a direct extension from pulmonary lesions, and isolated spinal disease caused by hematogenous seeding has not been reported in the literature. Spinal disease is the cervical area in 10%, thoracic area in 50%, lumbar area in 20%, and sacral in 20%.³ In the spine the disease begins in the vertebral body or in the adjacent ribs. The inter-vertebral disc is preserved because cysts developed beneath the periosteum and ligaments and the dura always remain intact. If a cyst extends beyond the vertebral body anteriorly or laterally it forms a spherical cyst as it always does in soft tissues.³

Patients with spinal hydatid disease usually present with a long history of back pain or symptoms of spinal cord compression. Weakness of the limbs occurring late. Paraplegia or nerve root compression is said to occur in 25% to 84% of patients.^{2,3}

Treatment is surgical, the objective being to remove all of the cysts and involved bone from around the spinal cord, usually by laminectomy. The use of oral mebendazole to destroy the cysts may give a substantial advantage.

Summary of patients

During the last 10 years (1983–1993), four patients with vertebral hydatidosis were admitted with pain and symptoms of spinal cord compression to the Neurosurgery Department of our hospital (Tables 1 and 2).

All patients underwent an operation (Table 3). We present the results of neurological examination, neuro-radiological, surgical and histopathological findings.

Patient 1

A 21-year-old man presented with a 4-month history of low back pain and weakness of leg movements. Examination revealed a moderate degree of paraparesis and loss of sensation below T10. His erythrocyte sedimentation rate (ESR) and full blood count (FBC) were normal. Plain X-rays of the spine were normal. But myelography disclosed a block at T6 level. A laminectomy of T5–6 was performed and the cyst was totally removed, followed by lavage with hypertonic saline solution. Moderate paraparesis was still present immediately after surgery. After three months, neurological examination of the patient was normal. We administered mebendazole in a dose of 40 mg/kg/day for three months.

Patient 2

A 35-year-old man presented with a 3 week history of impaired leg movement. Examination disclosed spastic paraplegia and loss of sensation below T5. Plain X-rays of the spine and computed tomography (CT) scan of the spine showed involvement of T7. A total laminectomy of T7 was performed, and hydatid cysts were found in the epidural space. These cysts were totally removed and the area was washed out with hypertonic saline solution. The diagnosis was confirmed histologically. At follow-up 1 year later the neurological examination was normal, but the patient returned 22 months after surgery with further weakness of the lower limbs. Repeat investigations including CT scan at the same level showed evidence of hydatid cysts in the paravertebral muscles beneath the muscle fascia. At reoperation, multiple cysts were excised from the posterior paravertebral area. Mebendazole was admi-

Table 1 Age and sex distribution, initial complaints and neurological findings of these patients with hydatid cyst

Case no	Age	Sex	Complaints	Duration	Neurological findings
1	21	M	Back pain weakness at leg movements	4 months	Moderate paraparesis loss of sensation below Th10
2	35	M	Impairment of leg movements	3 weeks	Paraplegia loss of sensation below Th5
3	29	F	Low back pain and pain at right leg	2 months	Sciatalgia loss of sensation L4–L5
4	22	M	Back pain and weakness at leg movement	7 months	Severe paraparesis loss of sensation below Th8

Table 2 Plain x-ray examination and myelographic findings

Case no	Plain radiograms	Myelography
1	Normal	Block at Th6 level
2	Normal	Block at Th7 level
3	Lytic lesion at sacrum	Filling defect at L4 level
4	Normal	Block at Th6 level

nistered in a dose of 40 mg/kg/day for 6 months. The patient subsequently made a full neurological recovery.

Patient 3

A 29-year-old woman presented with a 2 month history of low back and right leg pain. Examination indicated sciatic pain and loss of sensation in L4–L5. Routine blood laboratory tests did not show any abnormalities. But plain X-rays revealed a compressed vertebral body at L4, and a CT scan showed irregular erosion of the cancellar bone of L4 vertebral body (Figure 1). Myelography revealed filling defect at L4 level. Anterior spinal decompression by a retroperitoneal abdominal approach was performed. The vertebral body was excised and an autologous iliac bone graft was inserted into the defect. We performed posterior fusion for stabilization 2 months later (Figures 2 and 3). The patient was neurologically normal by the third month. She was also treated with mebendazol in a dose of 40 mg/kg/day for 3 months.

Figure 1 Preoperative computed tomography scan shows irregular erosion of the cancellar bone of L4 vertebral body in third case.

Patient 4

A 22-year-old man presented with a 7 month history of back pain and leg weakness. Examination showed severe paraparesis and loss of sensation below T8. His ESR was 24 mm/hr and there was no eosinophilia. Plain X-rays of the spine were normal but myelography showed a block at T6 level. A T4–T6 laminectomy was performed. The patient was also treated with mebendazole in a dose of 40 mg/kg/day for 3

Table 3 Surgical procedures, postoperative early neurological findings and late neurological findings in four patients with spinal hydatid cysts

Case no	Operation	Postoperative Early Findings	Postoperative late findings
1	Th5–Th6 Laminectomy	Moderate paraparesis	Normal in third month
2	Th7 Laminectomy	Moderate paraparesis	Normal in one year; reoperation of Th4,5,6 paravertebral cyst in 22 th month; normal 2nd year
3	Retroperitoneal abdominal L4 vertebrectomy, anterior and posterior fusion	Improvement	Normal in third month
4	Th4–Th6 Laminectomy	Severe paraparesis	Moderate paraparesis

Figure 2 Postoperative MRI appearance in the same case.

Figure 3 Postoperative plain lumbosacral appearance in the same case.

months. The patients late neurological condition was one of moderate paraparesis.

Discussion

Hydatid disease is localized to bone in about 1% of all cases.¹⁻⁴ Of which in 50% the involvement is spinal.²⁻⁶ Hydatid disease was first described by Churrier in 1807.^{2,7} In the literature, different percentages are given for hydatid-cyst disease causing compression of the spinal cord. Our four patients constitute 1.2% of all cases of spinal compression diagnosed surgically treated, and histopathologically identified during the 10 year period reported.

Three out of our four patients were under the age of 30 years. The GATA is a Military Medical School, thus our patients are either young soldiers or members of their family. The average age of our patients is younger than those reported in the literature.^{2,4,5,8}

It is known that hydatid-cyst disease can cause compression of the spinal cord.^{2,7,9} Generally the first complaint is of radicular pain, as has been stated by Grisel and Deve.¹⁰ In previous studies the incidence of paraplegia due to spinal hydatid disease was also reported as being 25-45, 4%.^{2,9} These same findings are reported in these series. Hydatid disease is said to be most commonly localised to the thoracic region.^{2,3,9} In our series, 75% of the lesions were in the thoracic

area, 25% were in the lumbar area. Special investigations such as the Casoni and Weinberg tests are helpful, but false negatives often occur. These tests are also reported to be of little value when bones are involved.^{2,3,9} This was also our experience. Plain X-rays usually show 'moth-eaten' areas of vertebrae surrounded by sclerosis. Calcifications extend into the adjacent soft tissues.^{2,9} CT scans are of great value in demonstrating cystic cavities and bony erosion. In the CT scans, vertebrae affected by the disease to a lesser extent showed irregular erosions of the cancellous bone, with well-to ill-defined margins, reflecting the multivesicular infiltration by the parasite. Spread of parasitic foci towards the periphery of the vertebral body resulted in marked fragmentation of the vertebral body, the pedicles, the neural arch, and the heads of the ribs. MRI, obtained by spin-echo sequence shows parasitic cysts within the spinal canal and in the paraspinal tissues as areas of low signal intensity. By using a multiecho sequence, the lesions exhibit higher intensities, with no appreciable differences being recorded between the signals from different cysts. Massive bony destruction was clearly shown.¹ Surgical eradication of the spinal disease is usually effected by carrying out a laminectomy, as reported in the literature. In one of our patients, decompression with a retroperitoneal abdominal vertebrectomy and anterior bony fusion was utilised

and a good result was obtained. Recurrence in the paravertebral muscles beneath the muscle fascia was seen one patient (25%), who required a reoperation 22 months after the first operation. After the second operation, mebendazole was administered in a dose of 40 mg/kg per-a-day during 6 months and a good result was obtained. To prevent recurrence, it has been recommended that hypertonic saline solution be used during the operation. Mebendazole was administered postoperatively in all of the patients.

In the early postoperative period, neurological improvement was seen in three (75%) of our patients. There was no surgical mortality. The mortality in the literature is said to range from 3% to 14.4%, and the recurrence rate from 30% to 40%.^{2,11} Recurrence was seen in one patient that during the 5 years. Three patients are under review.

Hydatidosis of the spine is rare world-wide but is more common in developing countries and should be considered in the differential diagnosis of patients with spinal cord compression. Because patients with severe paraparesis usually have epidural disease the prognosis reported in the literature is usually good.

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