Vertebral hydatid disease
Clinical experience with 27 cases

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The authors present 27 cases of vertebral hydatidosis with clinical and laboratory findings. The most frequent location of the lesion was the lumbar spine. Principal neurological symptoms were paraparesis, sphincter disturbances, paresthesia and paraplegia. The average number of surgical interventions per patient was 2.6; the most common procedure was laminectomy with extirpation of the cyst and surgical toilet. The results of surgical treatment were generally good in the immediate postoperative period, but long-term results were poor.

KEY WORDS • vertebral hydatid cysts • differential diagnosis • spinal cord compression

Hydatid cysts are found in bone in 0.5% to 2% of all cases of hydatidosis. The bones most often involved are the vertebrae (44%), the long bones of the limbs (38%), the ilium (16%), the skull (4%), the ribs (3%), the scapula (1.5%), and the sternum (0.8%). Location of the parasite in bone is always primary. In bone tissue, the Echinococcus granulosus larva is never unilocular; instead it is multilocular in form due to the lack of defensive reaction of the tissue. The parasite grows in the direction of least resistance, infiltrating and damaging the bone like a tumor. It may lead to spontaneous fracture. A radical surgical procedure is the preferred therapy.

Hydatid disease of bone is a rare condition. We believe it will be of interest to describe the laboratory and clinical characteristics, aspects of treatment and postoperative course in 27 cases of vertebral hydatidosis treated at our institutes.

Clinical Material

We reviewed the records of 22 patients treated in the Instituto de Neurocirugia e Investigaciones Cerebrales, and five from the Neurosurgery Unit of the Hospital José Joaquin Aguirre, between 1950 and 1972. Eighteen patients were male and nine female; ages ranged between 7 and 63 years with an average of 36 years. In all cases but one, diagnosis was verified at operation, the remaining case was confirmed at necropsy.

Summary of Cases

Site and Lesion

Hydatid disease was found most frequently affecting the lumbar (14 cases) and dorsal (12
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cases) vertebrae. In 13 cases more than one vertebra was diseased. Seven patients had multiple hydatid infection.

Signs and Symptoms

Table 1 shows the time elapsed between the onset of the disease and the first medical interview; this time ranged between 1 month and 15 years. In all patients, neurological problems were the presenting symptoms (Table 2); 26 patients (96.3%) suffered some type of pain at onset of their illness. The clinical manifestations most frequently observed in this group are described in Table 3: paraparesis, sphincter disturbances, paresthesia and paraplegia were the most important.

Nine patients (33%) had absolute eosinophilia (more than 400 eosinophils/mm³ of blood). The preoperative diagnosis in the 27 cases is seen in Table 4. Only eight cases were correctly diagnosed before surgery; three of these patients had previously undergone surgery for hydatid disease.

X-ray Findings

Plain x-ray films of the vertebral column suggested a diagnosis of hydatid cyst in six cases, a bone tumor in four, bone metastasis in two, and Pott's disease and a spinal cord tumor in one case each. In two cases the spine film was reported as normal; in the remaining patients nonspecific radiological changes were observed which did not permit a provisional diagnosis (Fig. 1). Myelography was performed on 17 patients and in all of them a blockade was demonstrated (Fig. 2).

Surgical Results

The number of operations performed on each patient varied between one and 11, with an average of 2.6 operations. The types of operation performed are presented in Table 5. In general, there was a total or partial remission of the symptoms within the first month after the operation; however, late results were poor, due to recurrent pain, recurrence of initial symptoms and sphincter disturbances, and repeat surgery was often needed. One patient with dorsal cysts penetrating into the thoracic cavity died from purulent pleurisy 3 months after laminectomy and extirpation of the cysts. Fifteen patients (60%) of those needing more than one operation are being followed as outpatients; the chief problems in this group are sphincter disturbances and paraparesis.

Discussion

The larva of *Taenia echinococcus* in the bone is multilocular in form, penetrating into the spongy tissues in all directions. This growth also takes place by microvesicular infiltration of the bone, with occasional involve-
ment of the neighboring soft tissue, as occurred in five of our cases. For this reason it is important to remember that whenever hydatidosis is observed in the soft tissues that surround a bone, a bony origin must be sought.\textsuperscript{12,14}

There is a greater incidence of the disease in males (66.6%), and vertebral hydatidosis is seen more frequently in patients between the ages of 21 and 40 years; this is in agreement with Dévé's findings.\textsuperscript{9} In our group there was a higher incidence of localization in the lumbar than in the dorsal spine.

The slow growth of the parasite explains the late onset of symptoms. In general, patients seek medical advice for symptoms such as infection, fracture, local swelling, or neurological involvement\textsuperscript{4} due to spinal cord lesions.\textsuperscript{7,17} All our patients had involvement of the spinal cord.

\textbf{FIG. 1.} Patient with vertebral hydatidosis. \textit{Upper Left}: Frontal x-ray film showing destruction of the left half of the body of L-1 with narrowing of the adjoining disc spaces. There is angulation of the vertebral column toward the left from the level of L-1 downwards. \textit{Upper Right}: Tomogram showing the destruction of the left half of the body of L-1 can be seen more clearly. \textit{Lower Left}: Lateral radiograph showing the same alterations that are shown in the frontal x-ray view and in the tomogram.
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The most important diagnostic signs to be found in this disease are symptoms of spinal cord and radicular compression, such as the presence of a swelling on the vertebral column, indicative of a compressing lesion of the spinal cord. Marked exacerbation of the symptoms on palpation and percussion is almost always observed in hydatidosis, and also in some tumors, but is not found in pain from other vertebral origins. In cases of prolapsed intervertebral disc, with which hydatidosis may be easily confused, palpation and percussion of the vertebrae may cause pain, but never produce the extraordinarily severe exacerbation of symptoms described above; in those cases, exacerbation of symptoms is produced not by palpation, but by movement. Analysis of Table 2 shows that in 26 of our cases the illness began with pain of a lumbago type, and as the disease advanced, the pain progressed to lumbosciatica. In some cases, the onset of the pain was abrupt and intense, coincident with a spontaneous vertebral fracture. Bedrest, anti-inflammatory drugs, and analgesics induced only a partial remission, for the course of the pain was always progressive.

Preoperative diagnosis was correct in only eight cases. The low incidence of this disease may prevent the attending physician from considering this possibility as a cause of spinal cord pathology. It may frequently be confused with tumors of the spinal cord, through incorrect interpretation of the x-ray films. In a country where hydatidosis is endemic, as in Chile, the possibility of the disease must be borne in mind if a patient presents with symptoms of a slowly developing tumor or progressive spinal cord compression. The possibility of this diagnosis is even more likely when the patient comes from a rural zone as in 16 of our cases.

The diagnosis can be confirmed by x-ray film, when there are zones of multilocular osteolysis with a hazy image of the bone, without periosteal or osteophytic reaction and without processes of condensation. In some cases the vertebral body is eroded and has a typical honeycomb appearance. When para-vertebral lesions are found such as involvement of the ribs or round shadows in the soft tissues as in six of our patients, the diagnosis of vertebral hydatidosis is highly probable. It is important to point out that there are no pathognomonic radiological signs. In most cases the intervertebral disc is intact, but the cartilage may be flattened or distorted by a vertebral fracture. Myelography revealed the location of cord compression in the 17 patients in our series who underwent this technique. Blood eosinophil count is elevated in around 30% of the cases of bone hydatid disease. Immunological tests, especially immunoelectrophoresis, are of great diagnostic aid in hydatidosis.

![Fig. 2. Myelogram showing total arrest of the contrast medium at the level of L-2 and L-3.](image)

**TABLE 4**

<table>
<thead>
<tr>
<th>Preoperative Diagnosis</th>
<th>Cases No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>cauda equina tumor</td>
<td>10</td>
<td>37.1</td>
</tr>
<tr>
<td>new growth of the spinal cord</td>
<td>7</td>
<td>25.9</td>
</tr>
<tr>
<td>hydatid cyst</td>
<td>4</td>
<td>14.8</td>
</tr>
<tr>
<td>recurrence of hydatidosis</td>
<td>3</td>
<td>11.1</td>
</tr>
<tr>
<td>suspected dorsal hydatidosis</td>
<td>1</td>
<td>3.7</td>
</tr>
<tr>
<td>lumbosacral meningomyelocele</td>
<td>1</td>
<td>3.7</td>
</tr>
<tr>
<td>spina bifida</td>
<td>1</td>
<td>3.7</td>
</tr>
<tr>
<td>undiagnosed</td>
<td>1</td>
<td>3.7</td>
</tr>
<tr>
<td>total</td>
<td>27</td>
<td>100.0</td>
</tr>
</tbody>
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All our cases were treated surgically (Table 5), with a total of 69 operations in 26 patients (one died before surgery). In three patients surgery was performed solely for the relief of intractable pain: anterolateral cordotomy in two and thalamotomy of the posteroventral nucleus in one. Surgery has achieved only a partial and temporary improvement in the patients, without permanent relief. We believe that in many cases this is due to an incorrect preoperative diagnosis; the surgeon is faced with the necessity of performing an emergency laminectomy and spinal cord decompression with extirpation of the cysts, which may not be totally enucleated.

### References

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