Case Report

Transthoracic approach for ventrally situated paraspinal extradural hydatid cyst of the dorsal spine

ABSTRACT

A 40-year-old female presented with back pain without any neurological deficits. Radiological investigations revealed a ventrally situated paraspinal lesion causing widening of the right D4 neural foramen. She underwent a right posterolateral thoracotomy and excision of the lesion in toto, which was reported as a hydatid cyst on histology. Ventrally situated paraspinal extradural hydatid cysts are rare. A Transthoracic surgical exposure offers a direct approach for complete excision of the lesion, minimizing the chances of rupture and spillage.

Keywords: Dorsal spine, extradural hydatid cyst, posterior mediastinum, transthoracic approach, ventral paraspinal hydatid cyst

INTRODUCTION

Hydatid cyst disease is caused by *Echinococcus granulosus* infection. The liver and lungs are the most frequent locations of *E. granulosus* infection, whereas 0.5%–2.0% of all cases occur in the musculoskeletal system, of which 50% of cases are spinal hydatid cyst. In the spine, the most common location is the dorsal spine.[1] The authors present a 40-year-old female patient with a paraspinal, dumbbell-shaped hydatid cyst widening the neural foramen. The cyst was successfully removed by an anterior approach through a posterolateral thoracotomy. Previously reported cases of spinal hydatid cysts have been operated through a posterior approach. Benzagmout *et al*. had reported the first transthoracic excision of hydatid cyst, and ours is the only other case which has been operated similarly.[2] The safety and benefits of this approach with the relevant literature are discussed.

CASE REPORT

A 40-year-old female presented with back pain for 3 years, with no neurological deficits. A chest radiograph showed a radio-opaque lesion in the right paraspinal area of the mid-zone [Figure 1]. A computed tomography axial image of the thorax showed a cystic lesion causing erosive widening of the right D4–D5 neural foramen [Figure 2]. The lesion was hyperintense on T2-weighted axial images of magnetic resonance (MR) imaging scan of the dorsal spine [Figure 3]. The cyst wall enhanced on contrast injection as noted in the coronal MR images [Figure 4].

The cystic lesion was excised by an anterior approach through a posterolateral thoracotomy. The right thoracotomy was performed through the fifth intercostal space after deflating the right lung using a double-lumen endotracheal tube. The lesion was noted paraspinally just behind the lung. A total excision of the lesion was achieved, and the cavity was irrigated with betadine solution and hypertonic saline, considering the possibility of a hydatid cyst.

The postoperative recovery was uneventful. Histopathology revealed the cyst to show features of hydatid cyst [Figure 5].

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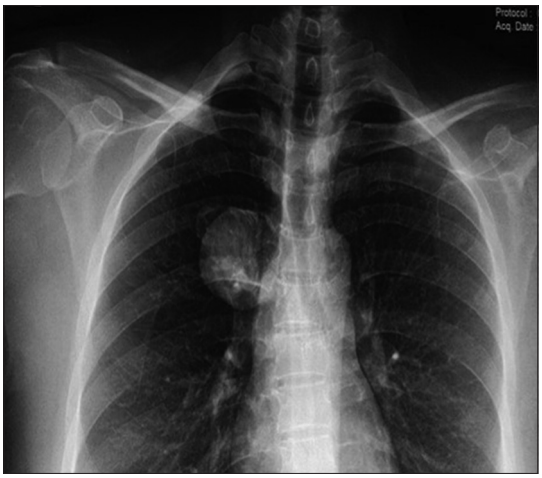

Figure 1: Chest radiograph showing a radio-opaque lesion in the right paraspinal area in the mid-zone

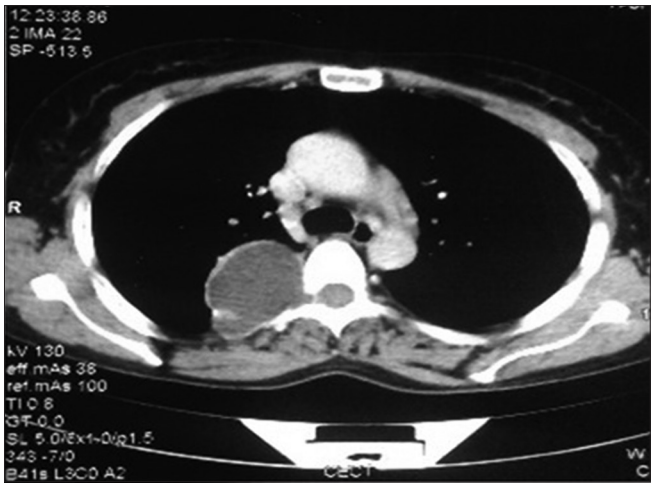

Figure 2: Computed tomography thorax showing erosive widening of the right D4–D5 neural foramen by a cystic lesion

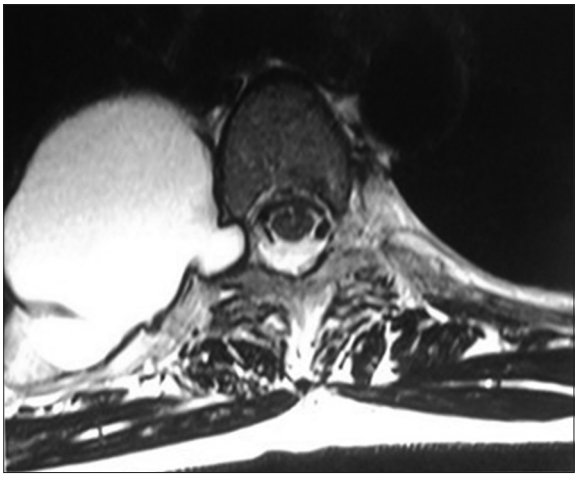

Figure 3: Axial T2-weighted magnetic resonance image showing a dumbbell-shaped extradural hyperintense lesion without a solid component

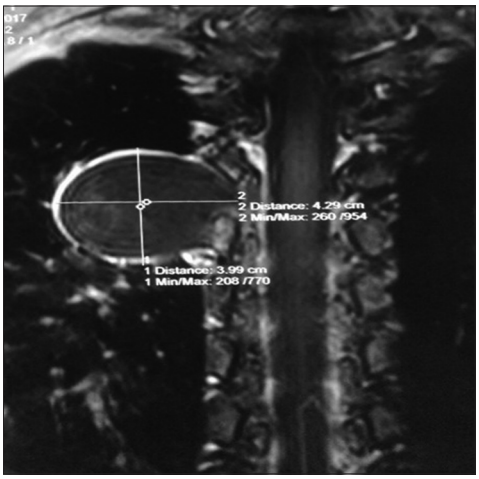

Figure 4: Postcontrast coronal magnetic resonance images showing dimensions of the cyst with peripheral cyst wall enhancement

At 1-month follow–up, the patient was relieved of back pain. A postoperative MR scan of the dorsal spine after 6 months showed a complete excision of the cyst.

DISCUSSION

Hydatid disease (echinococcosis) is a worldwide zoonosis produced by the larval stage of the *Echinococcus* tapeworm. In humans, the two main types of hydatid disease are caused by *E. granulosus* and *Echinococcus multilocularis*.[3] Spinal hydatid cysts present with medullary or radicular symptoms, according to their location.[4,5] However, our patient presented only with back pain without any neurologic deficits. Parvaresh *et al*. reported a similar dumbbell-shaped hydatid cyst of the spine with widening of the spinal neural foramen, but in their case, spinal involvement of hydatid disease was considered secondary, because the primary lesion was located in the liver, whereas in our case, spinal involvement was primary.[6]

Primary hydatid infestation of the spine without any other systemic involvement can be explained by the direct porto-vertebral venous shunt theory. The disease begins in the extradural area, suggesting that the parasite's embryo is possibly being transported through the porto-vertebral venous shunts.[5]

The differential diagnosis in cystic paraspinal lesions can be lytic metastatic tumors, cystic schwannoma, lateral thoracic meningocele, and neurenteric cyst.[7] We considered neurofibroma as the first differential diagnosis as the lesion was not multiloculated, multiple loculations being more common with hydatid cyst. Hydatid cysts do not have a solid component and tend to invade anatomical cavities. In addition, they do not show contrast enhancement but exhibit a cerebrospinal fluid-like signal intensity on MR imaging.[7]

Location of the lesion, familiarity with surgical approach, surgeon preference, and tentative preoperative diagnosis of

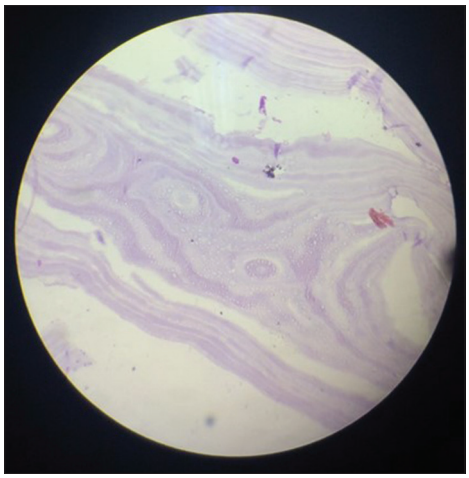

Figure 5: Histopathology slide showing H and E stain of the cyst wall composed of inner germinal layer (endocyst) and outer laminated layer (ectocyst) suggestive of hydatid cyst

the lesion decide the choice of surgical approach. Karakasli *et al*. have compiled the data of previously operated 13 cases of primary spinal extradural hydatid cyst, all of which had been approached posteriorly.[1] The goal of surgery in hydatid cysts is the complete removal of the cyst without rupture and spillover. Transthoracic approach gives direct access, has less surgical bleeding, and gives a better chance of excision of parasitic cysts without rupture. With accurate planning and careful surgical technique, transthoracic approach is safe and effective.[8]

Hydatid cyst should be considered in the differential diagnosis of all cystic lesions of the spine so that adequate intraoperative precautions can be taken to prevent spillage. In ventrally located cysts, especially for those in the posterior mediastinum, transthoracic approach is safe and effective. It also provides direct exposure of the lesion, hence minimizing the chances of rupture or spillage.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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