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Spinal Hydatid as a Rare Cause of Posterior Mediastinal Lesion: Understanding Cervicothoracic Sign on Chest Radiography

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Background:

Location of an intrathoracic lesion on chest radiograph is facilitated by application of 'silhouette sign'. This helps narrow down the differential diagnoses. The list of probable diagnoses reduces further on determination of the density of the lesion. A spinal hydatid presents as a fluid-density posterior mediastinal lesion on chest radiograph with destruction of the vertebral body and preservation of the disc space. Spinal hydatid is, however, rare.

Case Report:

We describe a case of a 30-year-old female with gradual-onset paraparesis since six months. Chest radiograph was suggestive of a posterior mediastinal lesion with fluid density and destruction of D4 vertebra. MRI findings were consistent with spinal hydatid. The patient was started on perioperative benzimidazole therapy with resection of the hydatid cyst. The drug therapy was continued for six months post-operatively.

Conclusions:

A chest radiograph helps localise the site and possible contents of the lesion. It also guides further investigations. MRI is the imaging modality of choice for spinal pathologies causing cord compression including spinal hydatid. Echinococcal involvement of the spine is a rarity but needs to be considered in the differential diagnoses for spinal causes of gradual-onset paraparesis.

MeSH Keywords:

Echinococcosis • Mass Chest X-Ray • Mediastinal Cyst

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<http://www.polradiol.com/abstract/index/idArt/895094>

Background

Osseous involvement by echinococcus is an infrequent event with a predilection for the dorsal spine [1,2]. The lesion typically exhibits fluid density and signs of posterior mediastinal location on chest radiograph. Confirmation requires serodiagnostic assays [1,2] and/or pathognomonic imaging finding of numerous daughter cysts [3]. In this case, we present a 30-year-old female with gradual-onset paraparesis due to a dorsal spine hydatid cyst.

Case Report

A 30-year-old female presented with gradually progressive paraparesis since six months with reduced sensation in the lower part of the trunk and lower limbs. There was no history of trauma. She also complained of pain in the upper part of the back. On examination the power was reduced in

both lower limbs with attenuated tone and reflexes. There was loss of sensation below D4 dermatome. Frontal chest radiograph depicted a well-defined fluid-density mediastinal lesion extending on both sides of the mediastinum. The lateral border of the lesion could be traced superiorly above the level of the clavicle suggestive of a posterior mediastinal location (Figures 1, 2). Lateral radiograph of the dorsal spine revealed collapse of D4 vertebra. On MRI spine, there was a large paraspinal cystic lesion arising from D4 vertebra with numerous daughter cysts within. One of the cysts showed a floating membrane within (Figure 3A-3C). There was cord compression. The disc heights were, however, preserved. Serodiagnostic tests were negative. The patient was operated on and the histopathology was consistent with echinococcal cyst. The patient was started on albendazole therapy for 6 months. At 7 months' follow-up, the patient is doing well.

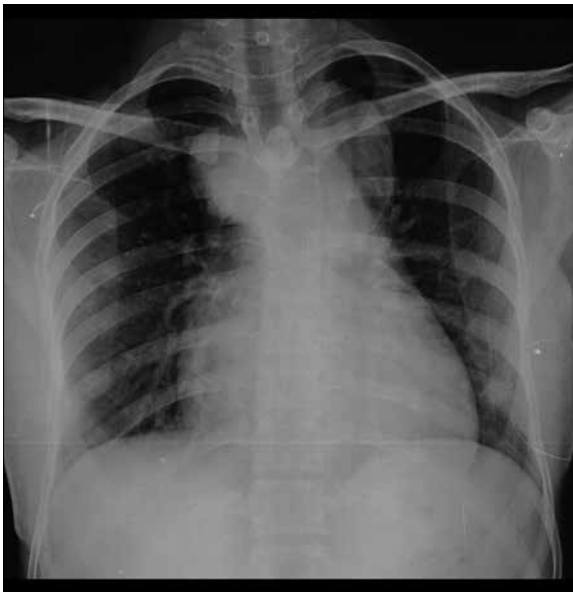


Figure 1. Frontal chest radiograph reveals fluid-density mediastinal lesion present on either side.

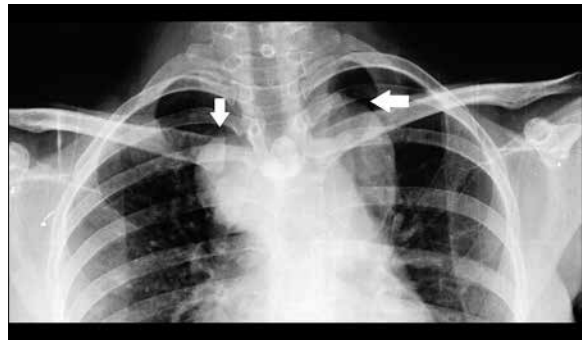


Figure 2. Close-up view of the radiograph (Figure 1) depicts that the lesion has a well-defined lateral border that is seen distinctly above the level of the clavicle on both sides (arrows) suggestive of posterior mediastinal location.

Discussion

The first step on visualisation of an abnormal radiopacity on a chest radiograph is to determine whether it is mediastinal

or pulmonary in origin. Subsequently, application of the so called silhouette sign further localises an intrathoracic mass. A mediastinal location is suggested by tapering superior and inferior margins of the lesion such that it forms an obtuse angle with the lung [4]. The lateral aspect of such a mass is draped by the pleura, hence the sharp penciled border. Bilaterality of a lesion excludes pulmonary location [1]. In our case, presence of all these signs on frontal radiograph helped us to localise the lesion to the mediastinum. Besides these signs, involvement of the sternum, spine or adjacent ribs also favor mediastinal location [4].

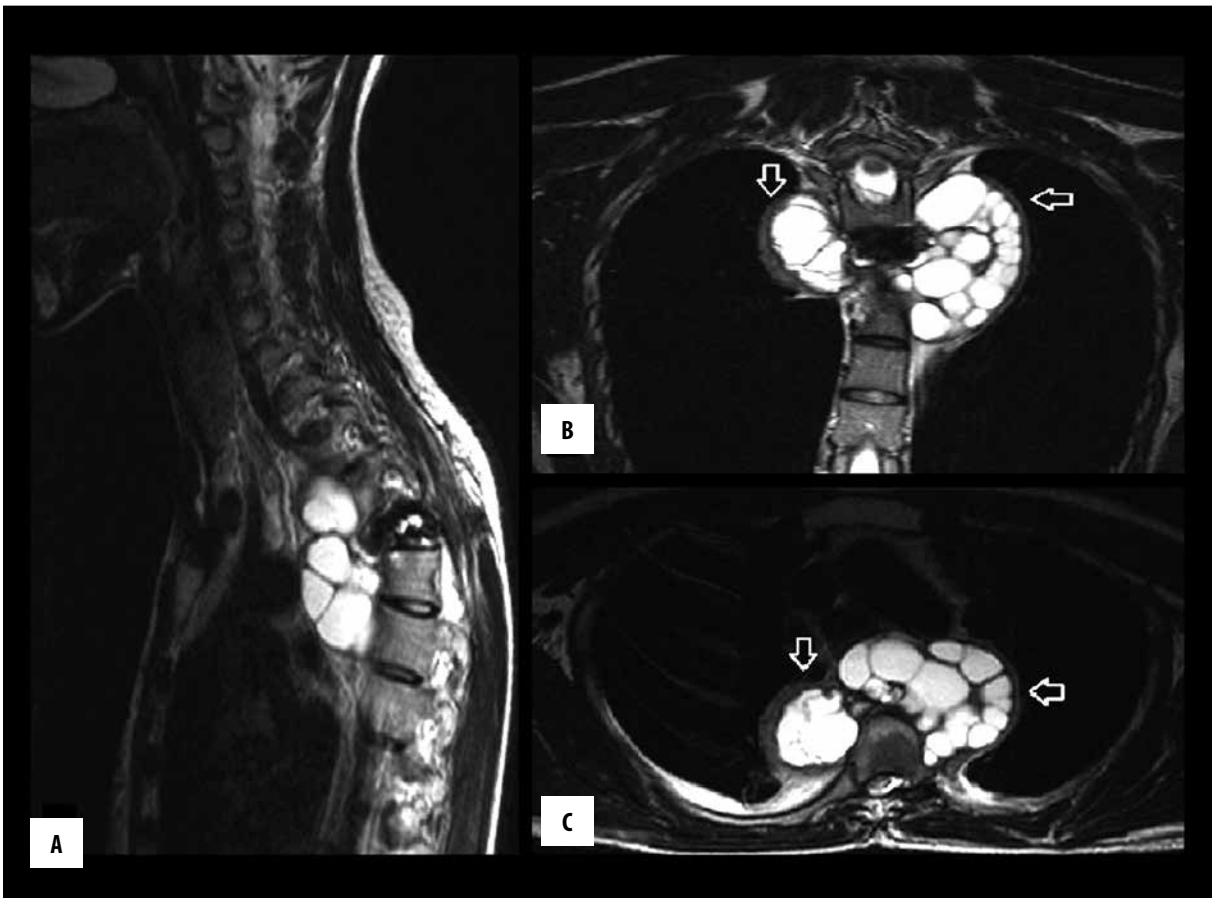


Figure 3. (A–C) MRI depicts hydatid cysts arising from D4 vertebral body. The hydatid cyst has daughter cysts (horizontal arrow). One of the cysts has a detached inner membrane (vertical arrow).

The next step is to further compartmentalise the lesion within the mediastinum in relation to the mediastinal structures. This exercise involves application of the silhouette sign (Felson and Felson) [5,6]. With the heart and the right border of the ascending aorta in the anterior mediastinum, left border of the aortic knob in the posterior mediastinum; inability to recognise these easily identifiable structures would mean presence of a lesion in consideration in that part of the mediastinum [5,6]. This helps narrow down the list of possible differential diagnoses.

For lesions in the superior part of the posterior mediastinum, continuity of the lateral border of the lesion superiorly above the clavicle is a must [5,6] (as seen in our case). This observation is based on the fact that the upper end of the anterior mediastinum begins at the level of the clavicle while the posterior mediastinum extends much higher. A lesion whose lateral margin fades above the clavicle is an anterior mediastinal mass that merges with soft tissues of the neck (– the cervicothoracic sign) [5,6]. Assigning contents of the lesion by determining its density will further narrow down the differential diagnoses. In our case the mediastinal lesion was located in the superior part of the posterior mediastinum and exhibited fluid density (density compared with that of the heart). The common differential diagnoses could have been a neuroenteric cyst, cystic schwannoma, meningocoele or lymphangioma. The MRI features in our case were, however, consistent with spinal hydatid.

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Spinal hydatid is a rare occurrence but its recurrence is quite common [1,2]. The life cycle of the causative cestode echinococcus alternates between carnivores (e.g. dog), the definitive host, and the sheep, the intermediate host. Humans are accidental hosts in the life cycle of the parasite and a dead end for further growth of the tapeworm into the adult form [1,2]. Infestation typically occurs on ingestion of eggs of the tapeworm. The larva then develops into a fluid-filled hydatid cyst which most commonly occurs in the liver. Involvement of the spine is seen in less than 1% of cases of which the dorsal spine is the most frequent site. Extension of the vertebral hydatid cyst into the adjacent rib is common. Typical imaging findings include lack of sclerosis of the involved vertebral body and preservation of the disc space [2]. On MRI, the cyst wall is T2 hypointense. The presence of daughter cysts within or a detached floating membrane is quite characteristic. Eosinophilia and detection of antigen are infrequent [1]. Treatment is surgical removal of the cyst to reduce neural compression with pre- and post-surgery albendazole therapy [1,2].

Conclusions

The present case thus exemplifies the importance of cervicothoracic sign on chest radiography. Besides, spinal hydatid should be included in the list of differential diagnoses of cystic posterior mediastinal lesions.