Trakia Journal of Sciences, No 3, pp 297-301, 2025
Available online at:
https://trakia-uni.bg

ISSN 1313-3551 (online) doi:10.15547/tjs.2025.03.014

Case Report

RARE THORACIC (MEDIASTINAL) MENINGOCELE IN AN ADULT: CASE REPORT AND BRIEF LITERATURE REVIEW

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ABSTRACT

Objective**:** The aim of this case report is to acquaint clinicians - radiologists, neurosurgeons, and thoracic surgeons—with this rare entity, which presents as a posterior mediastinal mass often detected incidentally on chest radiography in later adulthood.

Materials and Methods:A 43-year-old patient with a radiologically confirmed thoracic mass on chest radiography obtained in the context of a confirmed COVID-19 infection. Magnetic resonance imaging (MRI) performed on 19 November 2021 demonstrated a cystic lesion in the posterior mediastinum, to the left of the vertebral column. Findings raised suspicion for a communication of the lesion with the spinal canal.

Results: After preoperative evaluation, surgical treatment was undertaken: posterolateral thoracotomy, mediastinotomy, resection of the meningocele, and duraplasty for closure of the defect. The patient was discharged on postoperative day 7. At 6-month follow-up, there was no evidence of fistulization or other complications.

Conclusion: In patients with confirmed posterior mediastinal masses located in the costovertebral angle, the possibility of an anterior mediastinal meningocele should not be excluded. Surgical treatment is the only definitive diagnostic and therapeutic approach for this pathology.

Keywords: meningocele; posterior mediastinal mass; thoracic meningocele; spina bifida.

INTRODUCTION

Meningocele of the spinal canal is a congenital condition that most commonly affects the lumbosacral segment. In most cases, it presents as a skin-covered swelling in the region of the neck, back, and lumbosacral area - the so-called posterior meningocele. Because it is visible and protrudes above the surrounding skin, this meningocele is often diagnosed immediately after birth (1, 2). Cases of anterior mediastinal meningocele are exceptionally rare. For this reason, they may be discovered incidentally on chest radiography in childhood or in adult patients (3, 4). Thoracic meningocele (anterior mediastinal) is most often associated with neurofibromatosis type 1 (NF1) or other connective tissue disorders such as Marfan syndrome (5-7). Less commonly, it can occur as an isolated finding (4, 8, 9). In the case described, there was no evidence suggestive of such disorders. Nor were there any neurological or other somatic abnormalities that would have supported the diagnosis and led to its earlier detection. In this instance, we consider it to be an isolated thoracic (anterior mediastinal) meningocele that was completely asymptomatic until its incidental detection on a chest radiograph obtained for an unrelated reason.

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OBJECTIVE

The aim of this case report is to acquaint clinicians - radiologists, neurosurgeons, and thoracic surgeons - with this rare pathology, which presents itself as a posterior mediastinal thoracic mass most often detected incidentally on chest radiography in later life. However rare, it should always be considered in the

differential diagnosis of posterior mediastinal masses located in the costovertebral angle.

MATERIALS AND METHODS

A 43-year-old patient with a chest mass identified on chest radiography performed for a confirmed COVID-19 infection. Magnetic resonance imaging (MRI) on 19 November 2021 demonstrated a cystic lesion in the posterior mediastinum, to the left of the vertebral column, with no evidence of communication with the spinal canal.

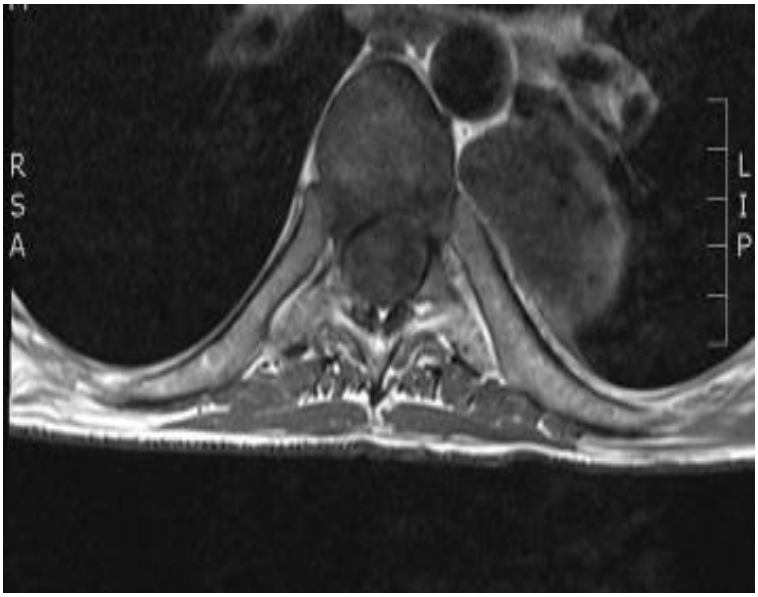

Figure 1. MRI of a thoracic (posterior mediastinal) meningocele

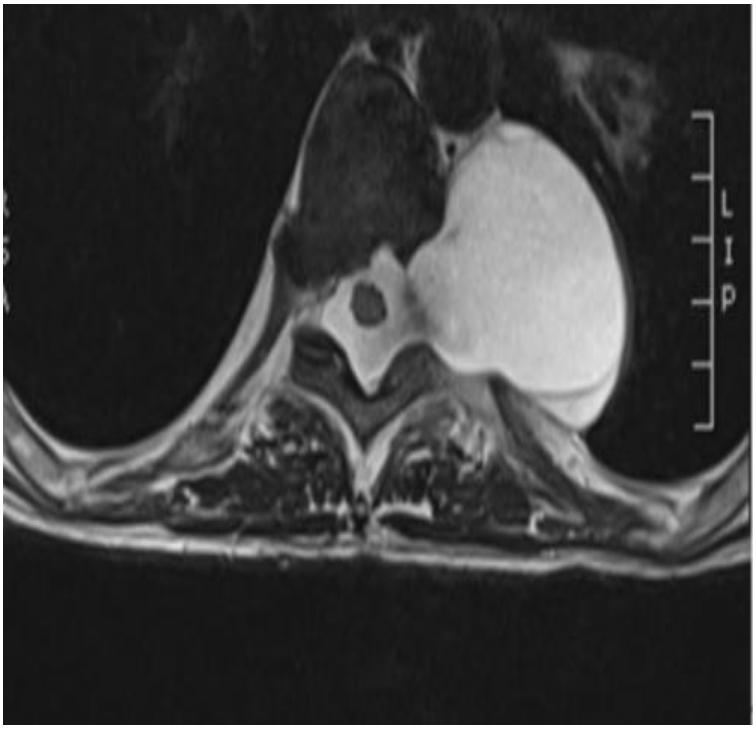

Figure 2. Contrast-enhanced MR image of a thoracic meningocele**.**

RESULTS

Following preoperative screening, surgical treatment was performed. Through a posterolateral thoracotomy and posterior mediastinotomy, a cystic lesion measuring 8 × 8 cm was exposed in the left costovertebral angle, abutting the descending aorta. Resection of the meningocele was carried out, and the dura mater was sutured with duraplasty to close the defect.

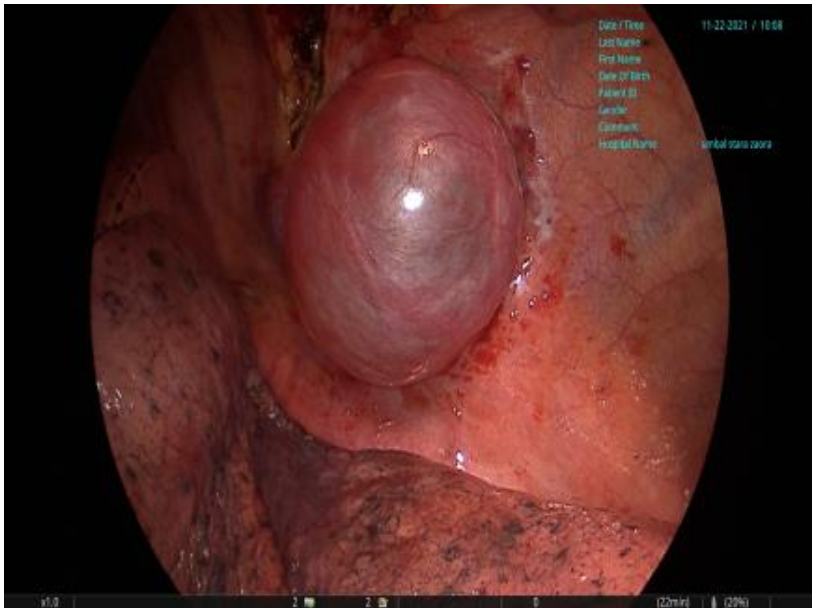

Figure 3. Anterior (medistinal) videothoracoscopic view meningocele.

After mobilization of the lesion from the surrounding tissues and opening it, approximately 150 mL of clear, transparent, colorless cerebrospinal fluid was evacuated. The interior of the meningocele was visualized. An elliptical dural defect measuring about 3 × 0.5 cm was identified. The spinal cord and the egress of CSF from the spinal canal through the defect were visualized.

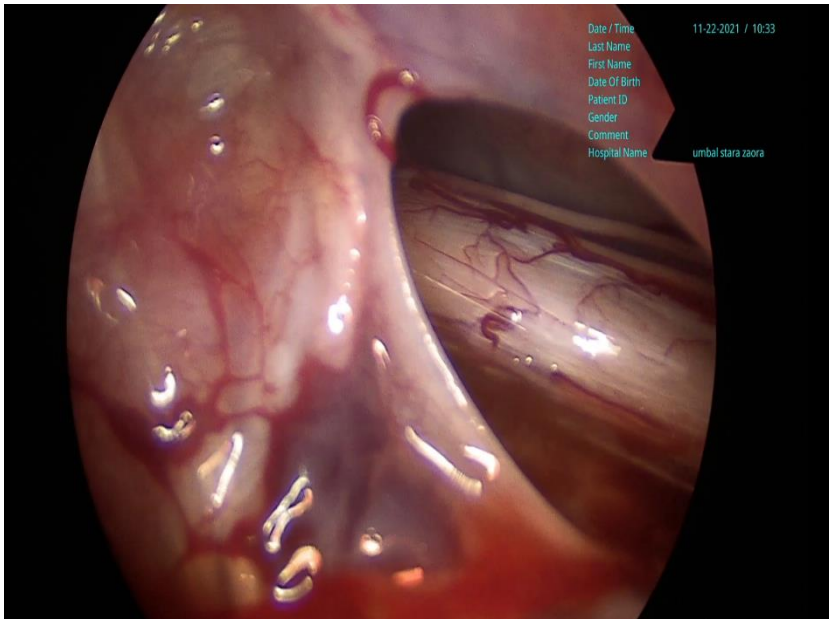

Figure 4. Videothoracoscopic view of the defect of the dura mater, spinal cord, and spinal nerves.

The greater part of the meningocele was excised, leaving 5-mm rims that were used to close the defect after filling the spinal canal with warmed normal saline. Additional plasty and watertight sealing of the spinal canal were performed using adjacent tissues with interrupted 3-0 atraumatic long-absorbable sutures.

The patient was discharged on postoperative day 7. Over 6 months of follow-up, there was no evidence of fistulization or other complications. Histopathological examination of the specimen confirmed: soft tissues - meninges - meningocele.

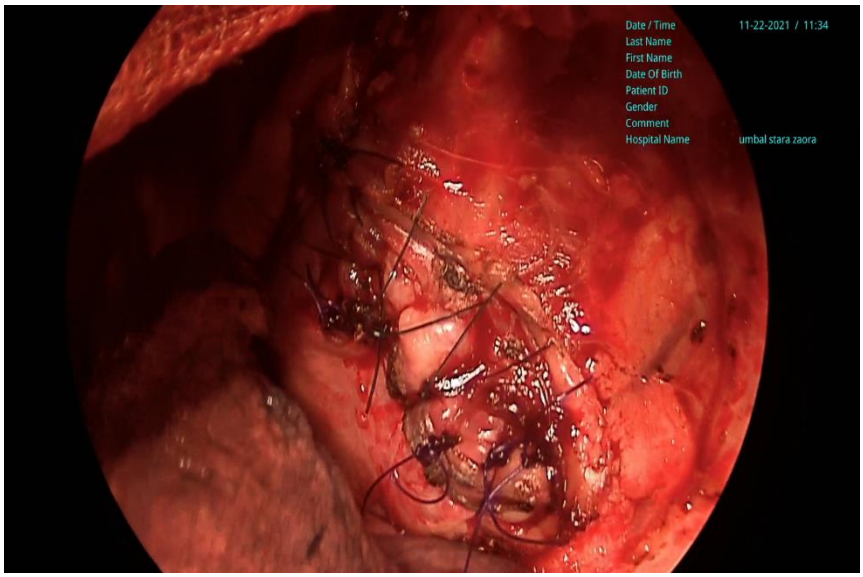

Figure 5. Videothoracoscopic view after resection of the meningocele and closure of the defect of the dura mater and mediastinal pleura.

DISCUSSION

Spinal meningocele is part of a group of congenital anomalies collectively referred to as spina bifida. It is a defect that arises during intrauterine development and consists of a failure of closure of the spinal canal, leaving an opening of variable size at different segments (1, 3-5, 9, 10). Through this defect, the meninges alone (meningocele) or the meninges together with the spinal cord (meningomyelocele) protrude.

The types of spina bifida are as follows: Closed (occult) spinal dysraphism: it is characterized by a dimple most often in the lowermost part of the spinal canal. Characteristic cutaneous markers include tufts of hair, hyperpigmented skin, a red patch, etc. over the site of the defect. The spinal cord remains underdeveloped, leading to impaired innervation of the pelvis and lower extremities. Spina bifida occulta (occult spina bifida): there are no cutaneous changes to suggest the condition and no neurological abnormalities. It is most often discovered incidentally on radiography, when a bony defect of the vertebrae is identified. (10) Meningocele: in this form, part of the meninges pass through the vertebral defect and form a sac filled with cerebrospinal fluid (CSF). The spinal nerves are not involved, and symptoms are absent.Meningomyelocele: here, the meninges, spinal cord, and nerves pass through the vertebral defect. This is the most severe form of spina bifida and presents with severe neurological deficit.

Meningocele is most often posterior, located along the midline, and presents as a cutaneous swelling in the child. It is most commonly localized in the lumbar segment. (10) It is identified immediately after birth or in early childhood, often as an incidental finding. Its occurrence in the posterior mediastinum and the thoracic portion of the spine is rare (3-6, 8, 9). It is usually asymptomatic and discovered incidentally on radiography or CT. Management is exclusively surgical. The most common postoperative complications are neurological symptoms related to the surgical technique and spinal-pleural fistula.

CONCLUSION

In patients with confirmed posterior mediastinal masses located in the costovertebral angle, the possibility of an anterior mediastinal meningocele should not be excluded. Surgical treatment is the only definitive diagnostic and therapeutic approach for this type of pathology.

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