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Case Study

DUMBBELL-SHAPED EPIDURAL CAPILLARY HEMANGIOMA, CASE REPORT AND REVIEW OF THE LITERATURE

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Abstract

***Background**: Hemangiomas are benign vascular hamartomas. Spinal epidural capillary hemangiomas (SECH) are rare and dumbbell-shaped SECH are even extremely rare. The complete surgical excision is the treatment of choice, yet this represents a dilemma as the mass is usually discovered late in big size.* ***Case Description**: A 55years old woman presented with incomplete spastic paraplegia (ASIA type III) 3 months ago. MRI showed a right-sided dumbbell-shaped mass against the 3rd to the 5th thoracic vertebrae. The mass was resected through a single stage posterior approach with hemilamenectomy and costotransve rsectomy. Histopathologic examination showed epidural capillary hemangioma.* ***Conclusions**: Dumbbell-shaped SECH is extremely rare lesion but should be considered in the differential diagnosis of a mass in this location. Single-stage posterior approach described in this report is a good surgical method for removing dumbbell tumor with large intrathoracic component without necessitating thoracotomy*

Keywords: *Dumbbell, Epidural, Capillary hemangioma.*

1. Introduction

Spinal epidural capillary hemangiomas (SECH) are rare [1]. Moreover dumbbell-shaped (SECH) with intrathoracic extensions are even extremely rare [2,3]. Various surgical strategies were described for managing this challenging situation including posterior, lateral, anterior and combined approaches [4-7] We desc0-ribe a case of a rare dumbbell-shaped (SECH) resected by a single-stage posterior approach, in addition, we provide a literature review of this rare lesion.

2. Case Description

A 55 years old woman presented with incomplete spastic paraplegia (ASIA type III) 3 months ago. On examination she had hypoesthesia at T5. The motor power in both hips and knees were grade 3, dorsi-flexors and plantar flexor of both ankles and toes were grade 2. The past medical and family histories were unremarkable. MRI showed a well-circumscribed and homogeneous dumbbell-shaped intraspinal extradural mass extending through the 3rd and 4th neural foramina into the thoracic cavity from the 3rd to the 5th thoracic vertebrae on the right side. The T1-weighted sagittal and coronal images with gadolinium showed intense homogeneous enhancement of the mass, figs. (1 & 2). The preoperative differential diagnosis was schwannoma

versus neurofibroma as schwannomas account for 90% of all dumbbell tumors [1].

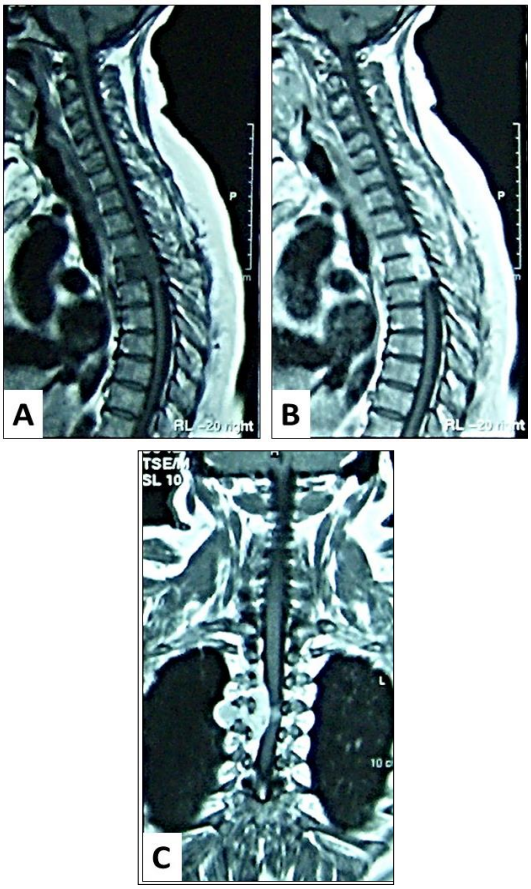


Figure (1) MRI Sagittal T1 images; **a.** sagittal T1 image showing thoracic hypointense lesion, **b.** Sagittal T1 image after contrast showing homogenous enhancement of the lesion, **c.** Coronal T1 image after contrast showing a right sided lesion compressing the cord and extending through the 3rd and 4th neural foramina with intrathoracic paraspinal component.

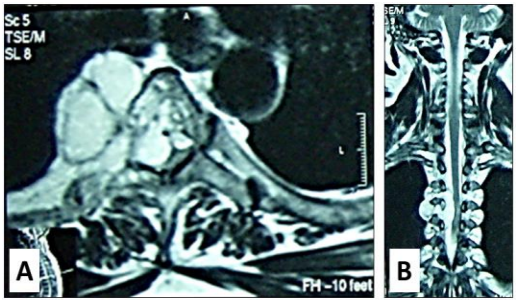
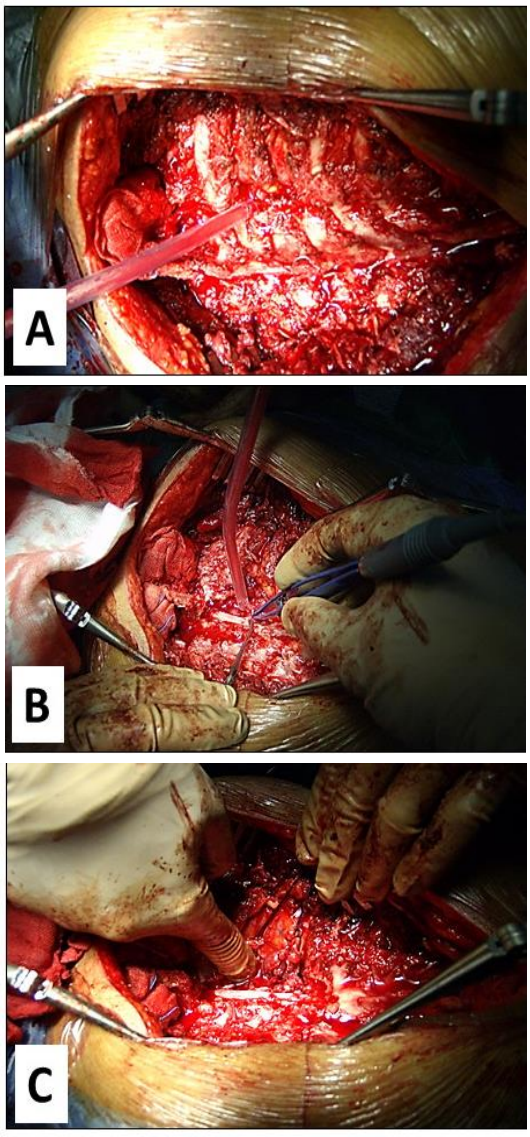


Figure (2) MRI T2 images; **a.** axial T2 image showing hyperintense lesion in the epidural space of the thoracic spine compressing the cord extending to the right paraspinal region through the right T4 neural foramen, **b.** Coronal T2 image showing the lesion and the paraspinal extension.

2.1. *Surgical technique*

The patient was placed prone under general anesthesia. A vertical midline incision was made to expose the laminae bilaterally at designated levels and extended laterally on the right side to expose the ribs. Costotransversectomy of the 4th and 5th ribs on the right side was performed first, fig. (3-a), followed by right-sided hemilaminectomy, facetectomy and resection of the pedicles of the 4th and 5th thoracic vertebra. The 4th and 5th right nerve roots were sacrificed followed by removal of the epidural component, fig. (3-b). Blunt gentle finger dissection was done to deliver the extraforaminal and paraspinal component of the tumor with particular attention to the pleura, figs. (3-c & d).



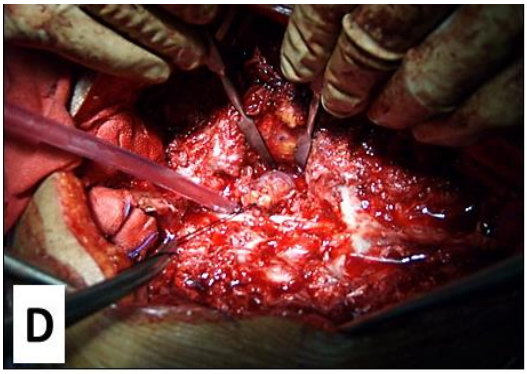
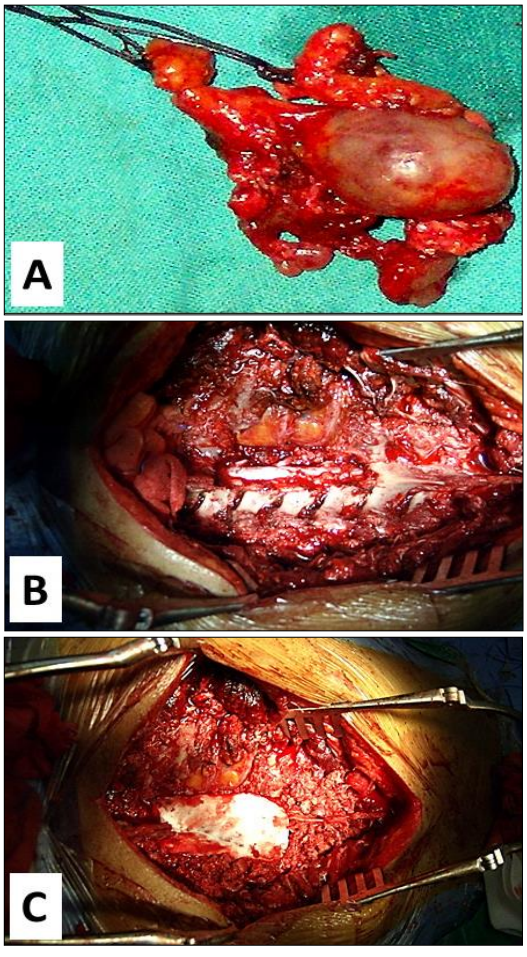


Figure (3) Intraoperative images; **a.** right costotransversectomy of the 4th and 5th ribs, **b.** hemilamenectomy and scarification of the right 4th and 5th nerve roots, **c.** & **d.**. Blunt extrapleural paraspinal dissection and delivery of the mass.

Valsalva maneuver to detect pleural tear was done. A piece of Gel foam covered the cord and the harvested bone was morselized and applied over the decorticated surface, figs. (4-a, b & d). Finally a drain was inserted and the wound was closed in layers. Histopathological examination revealed a capillary hemangioma, fig. (4-d).



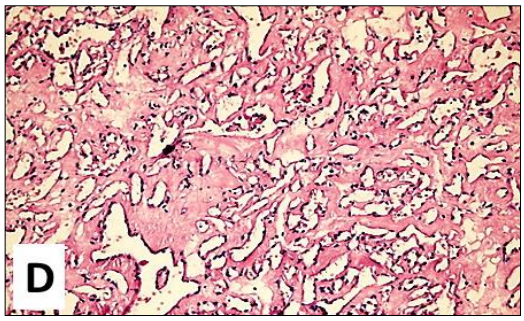


Figure (4) **a.** the resected mass en-bloc, **b.** the situs after complete excision of the mass, **c.** bone graft applied over the decorticated surface, **d.** Photomicrograph showing histopathological features suggestive of capillary hemangioma.

The drain was removed on the 3rd postoperative day and the patient was discharged for physiotherapy. Postoperative CT showed the unilateral hemilaminectmy and costotransversectomty with complete removal of the tumor, fig. (5).

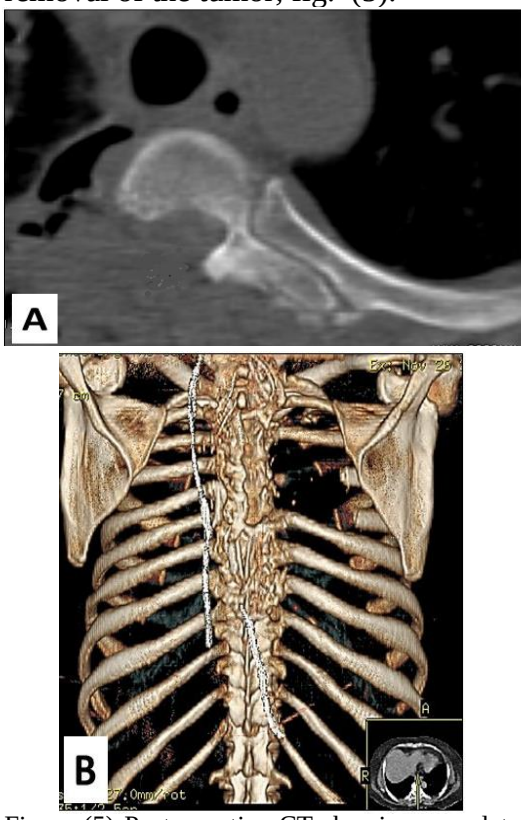


Figure (5) Postoperative CT showing complete mass excision through right sided hemilamenectomy and costotransvrsectomy.

3. Discussion

Spinal dumbbell tumors are tumors passing from one compartment to another in the

spine and constricted at the point where they penetrate the intervertebral foramina or dura mater [9]. Thoracic dumbbell tumors are relatively rare and most tumors are benign neurogenic tumors [8]. Spinal epidural hemangiomas account for 4% of all spinal epidural tumors, however dumbbell-shaped SECH is rare and it is often impossible to differentiate from dumbbell-shaped schwannomas [10, 11]. MRI is the method of choice for diagnosis [12]. In most instances the tumors are large by the time they are detected which is attributed to the slow insidious course of these tumors with the extraspinal tumor component usually larger than the intraspinal component which can be a challenge to the surgeon. Single-stage posterior approach with hemilaminectomy and costotransversectomy and en-bloc resection of the tumor was successfully done in this case. This approach is entirely extra pleural with lower risk of great vessels injury and avoiding the insertion of a chest tube. The thoracic spine is inherently stable by the rib cage, moreover the contralateral side was left intact [4], so we found no need to do posterior fixation.

4. Conclusion

Dumbbell-shaped SECH is extremely rare lesion but should be considered in the differential diagnosis of a mass in this location1. Single-stage posterior approach described in this report is a good surgical method for removing dumbbell tumor with large intrathoracic component without necessitating thoracotomy.

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