A rare case of extradural lumbar nerve root cavernoma

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Received: 17 January 2011 / Revised: 23 March 2011 / Accepted: 8 April 2011 / Published online: 19 April 2011
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Abstract We present a very rare case of an extradural nerve root cavernoma of the lumbar spine. The patient had signs of radiculopathy for the last 3 years. Conservative treatment was unsuccessful. The MRI-image revealed a lesion mimicking neurinoma of the left L3 nerve root. Surgical removal of the lesion was performed by an extreme lateral transmuscular approach. Intraoperatively, the lesion showed signs of intratumoural bleeding. In the histological analysis, a cavernoma of the nerve root was established. Despite the benign nature of these very rare lesions, complete surgical removal should be performed since a spontaneous regression is not to be expected and surgery relieves the patients from their symptoms.

Keywords Extradural cavernoma · Spinal nerve root

Introduction

Extradural nerve root cavernomas are very rare. In most of the cases, they arise from the vertebral bodies and extend into the extradural space [4, 6]. Purely extradural haemangiomas are uncommon and extraspinal nerve root cavernomas mimicking (radiologically) neurinomas have to our knowledge not been published before. Clinically, they can cause symptoms of radiculopathy [3].

Case presentation

We report the case of a 23-year-old male patient who was admitted to our department with symptoms of radiculopathy of the left L3 nerve root. No weakness or hypesthesia was reported. The symptoms increased progressively during the last 3 years and became very strong in the last 3 months prior to admission. In the MRI, the diagnosis of a L3 nerve root neurinoma was suspected. The lesion was located extradurally and lateral of the neural foramen (Fig. 1a–c). A far lateral approach to the lumbar spine was performed. Intraoperatively, we saw the remnants of blood into the tumour which made us suspect a bleeding into the tumour (puncture, trauma, spontaneous bleeding). A neurinoma could not be seen. The histological analysis of tumour specimen showed that the lesion was a cavernoma (Fig. 1d).

Discussion

Cavernomas belong to the group of haemangioma, which are benign congenital malformations [3]. Even if they have no mitotic activity they do not regress spontaneously and grow throughout life. The reason of growth is probably recurrent haemorrhage and thrombosis with recanalisation and organisation of tissue [2].

Histologically, cavernomas show irregular vascular channels with thin collagenous walls lined by a single layer endothelium [5]. Hemosiderin deposits are always seen together with degenerative signs of thrombosis and fibrosis [1]. Arteriovenous [AV] shunting is often absent because of the small size of the involved vessels [1]. This is the reason why angiography does not show AV-shunts in cavernomas. The hemosiderin deposits alone lead to the diagnosis of cavernomas.

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Fig. 1 Extradural cavernoma of the left L3 nerve root.
a Coronal view of a T2-weighted MRI image of the lumbar spine showing the lesion of the L3 nerve root. Intraoperatively and histologically the diagnosis of a cavernoma was made.
b Transversal T2-weighted view. **c** Transversal T1-weighted image with contrast medium implicating the diagnosis of neurinoma.
d Histological image of the cavernoma of the present case. Erythrocyte filled vessels with thin walls can be seen ($\times 20$)

Since the purely extradural location of cavernous haemangiomas represents less than 4% of all extradural spinal tumours, it is difficult to diagnose these lesions preoperatively with a CT or MRI. An angiography never shows any clues of a cavernoma since shunting is often absent (in contrast to the lesions involving the vertebral bone) [5].

Intraoperatively, signs of intratumoural bleeding are usually seen. Extradural haemangiomas seem to contain more often hemosiderin deposits compared to intradural lesions. The reason could be the easier removal of blood products outside the blood–brain barrier [1].

In rare cases enlargement of the intervertebral body can be seen [6]. MRI images are valuable in assessing the anatomic relationship to the nerve root and the thecal sac. The cavernoma is hyperdense in the T2-weighted image mostly because of the high content of stagnant blood [6]. Nevertheless, the diagnosis of the extradural haemangiomas preoperatively is very difficult.

Since this benign lesion does not regress spontaneously, complete surgical removal should always be performed to relieve the patients of their symptoms [6].

Conclusion

In the present case, we report a very rare case of an extradural nerve root cavernoma located outside the neuroforamen. The pre-operative MRI imaging showed a lesion in the L3 nerve root. It was thought that the lesion

was a neurinoma. Intraoperatively, though the lesion showed signs of previous bleedings and thrombosed material. We suspected a bleeding into the neurinoma. The lesion was completely removed by an extreme lateral transmuscular lumbar approach. Histological diagnosis showed that the lesion was a cavernoma. This case represents another example of how a surgeon can be surprised intraoperatively by a lesion, which radiologically can be misdiagnosed because of its rarity. The macroscopical intra-operative evaluation of the lesion is therefore still invaluable despite the enormous progress that radiology has made in the last years.

Conflict of interest None.

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