Case report

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Surgical treatment of hemangiopericytoma with intracanal and paravertebral growth. Clinical case

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Hemangiopericytoma can occur anywhere in the body where capillaries are located. However, most often this tumor is detected in the subcutaneous soft tissues, pelvic ring, lower limbs and retroperitoneal space [2]. Hemangiopericytoma rarely affects the central nervous system. Because of the rarity of the disease, the clinical features, treatment, and outcomes are poorly understood.

Patient M, 64 years old, male, applied to the polyclinic of the State University "Institute of Neurosurgery named after Acad. A.P. Romodanov of the National Academy of Medical Sciences of Ukraine" with complaints of pain in the thoracic spine with radiation to the left subscapular region of the body, numbness and weakness in the lower limbs. After ~~an~~ MRI, a diagnosis of a tumor of Th5-Th6 vertebrae was established. Given the presence of a spinal tumor in the patient with spinal cord compression, a decision was made to perform an operation to remove the tumor as a priority. After surgery, the patient's radicular pain and leg weakness immediately disappeared. CT was performed. The tumor was removed completely.

Hemangiopericytomas are aggressive neoplasms with a high recurrence rate and a tendency to metastasize. The recurrence rate of hemangiopericytoma ranges from 50 to 80%, and metastases - from 14 to 30%, but can be as high as 23-64%, which makes the treatment of this disease very difficult. Surgical intervention and postoperative irradiation in a dose of up to 60 Gy, based on the data of the literature review, significantly improves ~~s~~ treatment outcomes and reduces ~~s~~ the number of recurrences compared to surgery alone. Surgical resection of the tumor should be total, if possible, in cases when the tumor cannot be removed completely, it should be removed as subtotal as possible.

Key words: *spinal hemangiopericytoma; spinal tumor removal; surgical treatment of hemangiopericytoma*

Introduction

Hemangiopericytoma was first reported by Stout and Murray in 1942 [1]. It was previously thought to be a rare vascular neoplasm arising from Zimmermann pericytes around the capillary wall, but its origin is now thought to be fibroblastic rather than pericytic. It is generally accepted that hemangiopericytoma is a locally aggressive, potentially malignant tumor causing late local recurrences and distant metastases [2].

Hemangiopericytoma can occur anywhere in the body where capillaries are located, but most commonly in the subcutaneous soft tissues, pelvic ring, lower limbs and retroperitoneal space [2]. It rarely affects the central nervous system and even less often occurs in the spine [3]. The incidence of primary osseous spinal hemangiopericytoma is lower than that of primary meningeal spinal hemangiopericytoma [4]. Because of the rarity of the disease, clinical features, treatment, and outcomes are poorly understood.

Clinical case

Patient M., 64 years old, male, presented to the polyclinic of the Institute of Neurosurgery named after Acad. A.P. Romodanov of the National Academy of Medical Sciences of Ukraine with complaints of pain in the thoracic spine radiating to the left subscapular region of the body, numbness and weakness in the lower limbs. It is known from the anamnesis that the pains appeared during the last month. He underwent symptomatic treatment, which was ineffective. A week prior to admission, he had noticed numbness and weakness in the lower limbs. The patient underwent magnetic resonance imaging of the thoracic spine. A Th5–Th6 vertebral tumor was detected, which spread intracanally and paravertebrally, had gross spinal cord compression at the level of the Th5–Th6 vertebrae, and involved the thoracic portion of the aorta in its growth ***(Fig. 1)***. The patient was consulted by an oncologist. A spiral CT scan of the thoracic, abdominal and pelvic organs with intravenous enhancement was performed (there were no secondary lesions, except for a tumour at the Th5–Th6 vertebrae level), blood analysis for tumour markers (within normal limits).

Given the presence of a spinal tumour with epidural compression of the spinal cord in a patient, the decision was made to primarily perform a spinal neurosurgery as

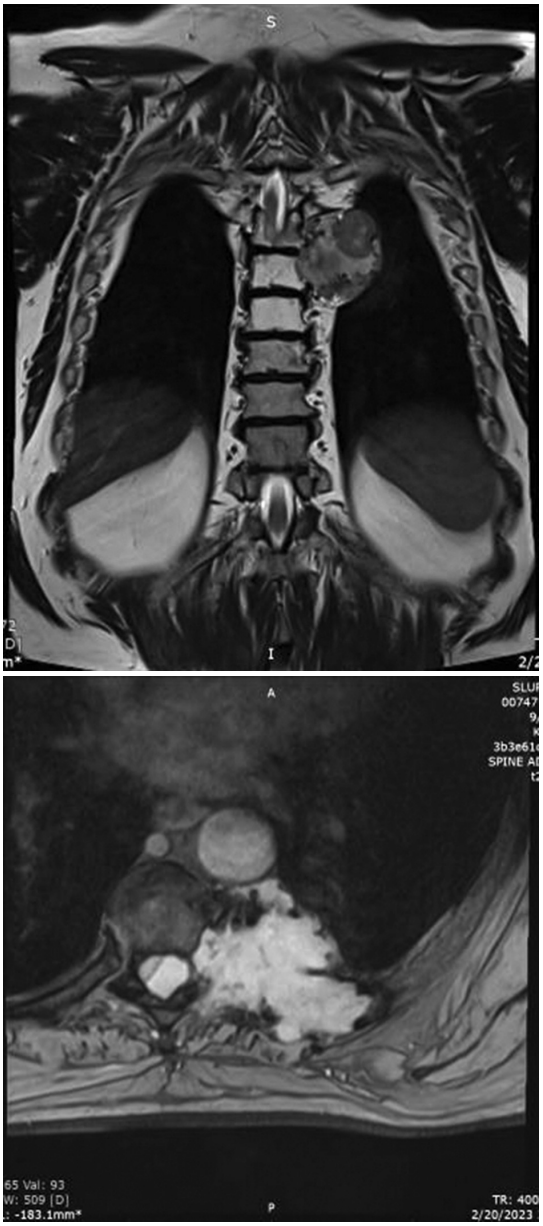

Fig. 1. Magnetic resonance imaging of the thoracic spine before surgery

a priority, aimed at removing the tumor, decompressing the spinal cord and stabilizing the spine in order to preserve a decent quality of life during further treatment.

Obtaining histological material of the tumour plays an important role in determining the tactics of patient management.

Due to significant paravertebral growth of the tumour, a posterolateral approach was used. Thoracotomy and facetectomy was performed at the level of the Th5–Th6 vertebrae on the left, laminectomy was performed at the level of the Th5–Th6 vertebrae. During the surgery, the tumour was completely removed, spinal cord decompression and stabilization of the spine were performed. Intraoperatively, the patient had significant blood loss, which is a characteristic feature of hemangiopericytoma ***(Fig. 2)***.

The postoperative period was uneventful. The patient's radicular pain and conduction motor, sensory and autonomic disturbances disappeared immediately after the surgical intervention. According to spiral CT scan, the tumour was completely removed ***(Fig. 3)***. The patient was discharged from the hospital on the 9th day. Four weeks after surgery, he underwent radiation therapy at the site of the removed tumour with a total dose of 60 Gy.

Hemangiopericytoma is a rare type of tumour that is usually treated surgically. However, the approach to

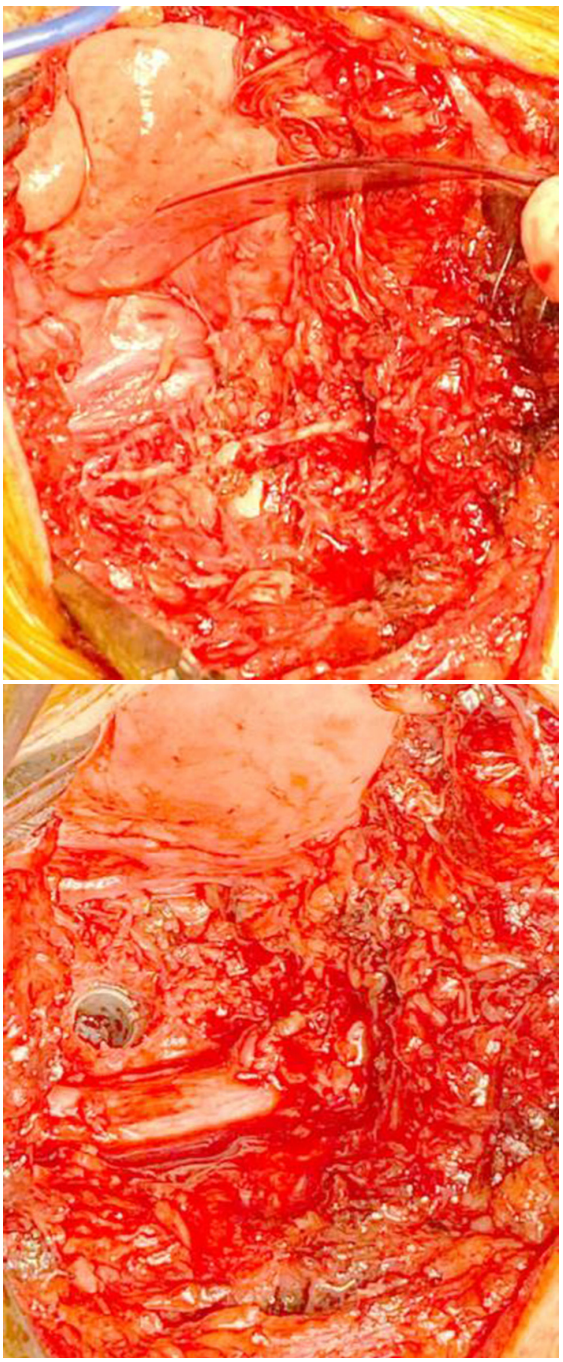

Fig. 2. Intraoperative photo

This article contains some figures that are displayed in color online but in black and white in the print edition

Fig. 3. Spiral CT scan of the thoracic spine after surgery

treatment depends on the size of the tumour, its location and other factors. If the tumour is small, its total removal is possible during surgical intervention. In the case of a significant size of hemangiopericytoma, the choice of approach is extremely important, it allows the tumour to be completely removed.

Hemangiopericytoma has been found to be an aggressive neoplasm with a high recurrence rate and a tendency to metastasize [6]. The recurrence rate ranges from 50 to 80%, metastases from 14 to 30% [5], but can be as high as 23–64% [6], making it a very difficult disease to treat. Chemotherapy based on vincristine, ifosfamide, doxorubicin and etoposide is used to treat this tumours. However, current chemotherapy regimens do not improve the prognosis, and are usually used only as a last resort [6]. Postoperative radiation therapy can have a significant beneficial effect on recurrence, metastasis, and survival [5]. Surgical intervention and postoperative radiation at a dose of up to 60 Gy have been reported in the literature to significantly improve treatment outcomes and reduce the number of recurrences compared to the surgery alone [6].

As in the case of soft tissue hemangiopericytoma, surgical resection remains the main treatment method for osseous hemangiopericytoma [8]. However, surgeons must be prepared for massive bleeding during tumour removal due to its high vascularity.

Ideally, complete surgical resection should be achieved for all cases of hemangiopericytoma to avoid or delay recurrence [8].

Conclusions

Surgical resection of the tumour should be total if possible, in cases where the tumor cannot be completely removed, it should be resected as subtotal as possible.

Due to the large number of pathological vessels and the high vascularization of the tumour, blood loss during surgery can be significant, which requires special attention during surgical preparartion.

According to the literature, the frequency of recurrence of hemangiopericytoma ranges from 50 to 80%, metastases - from 14 to 30%, indicating the need for dynamic monitoring of the patient.

Disclosure

Conflict of interest

The authors declare no conflict of interest.

Informed consent

Informed consent was obtained from the patient.

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