

## Complications of Surgical Treatment of Spinal and Spinal Cord Tumors

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**Synthesis:** The aim was to study the nature, structure and frequency of complications arising after spinal cord tumor removal. 198 cases of surgical treatment of vertebromedullary tumors were analyzed. In 26 (13,1%) of the operated patients there were post-operative complications in different terms after the intervention. The most formidable complications that often lead to fatal outcomes in the postoperative period are pulmonary artery thromboembolism, diagnosed in 2 (1.0%) cases. The risk of serious irreversible neurological complications after radical removal of tumors was 18(9,1%) of patients. The use of modern intraoperative techniques and fixation structures significantly reduces the risk of orthopedic complications.

**Keywords:** complications of surgical treatment of spine and spinal cord tumors, intraoperative technique, fixing structures.

### RELEVANCE

Of all central nervous system tumors, spinal cord tumors account for 1.4% to 10% (1, 4, 5). When operating on a spinal cord tumor, the surgeon always strives to decompress it, completely remove the neoplasm and, if possible, avoid the development of a new neurological deficit. But often, surgical interventions on spinal tumors, due to their anatomical localization and prevalence, are very difficult to remove. This leads to an increased number of intra- and postoperative complications, the management of which increases the postoperative bed day, requires serious economic costs and worsens the quality of life of patients. All this determines the urgency and social importance of this problem (2). Therefore, the clinical and functional status, in which the patient will end up as a result of postoperative treatment, is extremely important. Appearance after the operation of rough tetraparesis or tetraplegia in some cases in the postoperative period due to the addition of intercourse diseases may lead to death (3). All this justifies the analysis of emerging complications in the resection of spinal cord tumors and the incentive basis for the development of more gentle methods of their removal and, possibly, changes in treatment tactics and, ultimately, to reduce their frequency (1, 5, 6, 9).

### **Purpose of work**

Examine the nature, structure and frequency of complications arising after spinal cord tumors are removed.

### **MATERIAL AND METHODS**

The analysis of 198 cases of surgical treatment of vertebro-medullary tumors, which were in the clinic of the Republican Specialized Scientific-Practical Medical Center of Neurosurgery (RSSPMCN) for the years 2012-2018, was carried out, 26 of them had complications in different terms after surgery. The age of patients was from 12 to 74 years. Out of 26 complications, 11 (42.4%) patients had extramedullary tumors and 15 (57.6%) had intramedullary neoplasms. Clinical, neurologic electrophysiological (intraoperative control of CENS), radiological (MRI, MCT, X-ray), laboratory diagnostic methods were used.

### **RESULT AND DISCUSSION**

All the complications after spinal cord tumor removal are classified by us as follows:

1. In terms of time of occurrence: early - up to 1 month after the operation; late - 1 month after the operation.
2. Complications of the spinal cord: conductive disorders .
3. Complications in the field of surgical intervention: postoperative liquorice; hematomas of the spinal canal in the area of surgical intervention; formation of liquor cysts in the epidural and intermuscular space (pseudomyelorrhachis).
4. Extramedullary complications: pulmonary artery thrombembolism (TELA).
5. Orthopedic complications: kyphosis; scoliosis; functional instability.

The main number of complications after resection of primary spinal cord tumors developed in the early postoperative period, their frequency was 17 (65.3%). In 2 (1.0%) cases, complications were the cause of death. In late postoperative period, two types of complications were encountered - formation of liquor cysts in epidural and intermuscular space (pseudomyelorrhachis) and various deformations of the spine. They were diagnosed in 6 (23.0%) operated patients.

Complications of the spinal cord. In both extra and intramedullary neoplasms development of neurological complications in the postoperative period depended first of all on initial functional condition of the patient, localization, histological structure of the tumor and degree of spinal cord affection. Most often these complications developed in patients with tumor of malignant character in cervical spinal cord department with initially expressed neurological deficit. In patients after removal of extramedullary tumors, gross neurological disorders in the early postoperative period amounted to 4 (15.9%) cases. The most part of neurological symptomatology arising again and deepening after the operation had a reversible character. In 3(11,5%) patients with intramedullary tumors of the cervical section ascending spinal cord edema was diagnosed.

Non-infectious complications of the surgical area. Non-infectious complications of non-infectious character were observed in early and late postoperative period in 6(23%) patients,

they showed postoperative liquorice. It required installation of external lumbar drainage for 3-5 days and application of additional hermetic sutures on the skin in the liquoray area. Such tactics allowed to eliminate complications without additional surgical intervention.

Formation of liquor cysts in epidural and intermuscular space (pseudomyeloradiculocoele) in most cases occurred in patients with postoperative persistent liquorice. This type of complication was observed in late postoperative period in 3 patients (11.3%) as a result of non-sealing of the dura mater in the area of surgical intervention.

Pulmonary artery thromboembolism (TELA). In spite of the use of proven comprehensive prophylaxis, TEPA developed in 2 (1,0%) cases (2 out of 26 patients), which was the cause of fatal outcome.

Complications of the spine (orthopedic complications). Deformities of the spine, such as scoliosis or, more often, kyphosis of varying severity, were observed in our surgical series in 4 out of 26 patients (15.3%). Our data coincide with the literature in that the hemilaminectomy used for small, mostly extramedullary spinal cord tumors is not suitable for intramedullary tumors because the middle line of the spinal cord must be exposed. To reduce the traumatism of surgical access to spinal cord tumors, it is necessary to avoid damage to the intervertebral joints, perform osteoplastic laminotomy in children with subsequent immobilization of the spine for at least 4 months.

## CONCLUSION

1. The greatest number of complications after the removal of spinal cord tumors develops in the early postoperative period (1 month after the operation).
2. The most formidable complications, often leading to fatal outcomes in the postoperative period, are ascending spinal cord edema, developing in 0.6% and pulmonary artery thromboembolism, diagnosed in 1.4% of cases.
3. The risk of development of serious irreversible neurological complications after radical removal of intramedullary tumors was 9.0%. Serious neurological disorders in early postoperative period after the resection of extramedullary tumors develop in 5.9%. Thus the most part of neurological symptomatology arising again and deepening after the operation has a reversible character.
4. When using modern methods, surgical treatment of spinal cord tumors has minimal risks of general surgical complications and does not affect the clinical results of treatment of patients and lethality.

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