

RESULTS OF SPINAL TUMORS SURGERY

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SUMMARY

The clinical files of 122 operated patients in our Clinic of Neurosurgery St. Anna Hospital – Varna during 5-year period were retrospectively reviewed. 68 of them had significant episodes of radicular pain, 100 - motor deficit and 62 - bladder disfunction. X-ray, bone CT and MRT were performed in 56, 23, 79 patients, respectively. MRI effectively showed intra- extravertebral mass lesions. Overall treatment led to improvements in pain and motor deficit of 45 % of patients. Radicular pain, neurological deficit, infection, venous thrombosis, pneumonia and other complications before and after surgery are the major problems. The mortality rate in our series is 7,3 %. It's needed to determine the optimal timing of treatment strategies chemotherapy, radiation therapy and especially of surgery.

Key words: spinal tumors, spinal cord compression, surgical treatment, laminectomy, transpedicular fixation, postoperative complications.

INTRODUCTION

Treatment of spine and spinal cord tumors is complex and a multidisciplinary approach is required. Contemporary treatment include surgery, radiation therapy and chemotherapy. Outcome is dependent upon a number of factors. These factors are: the site of tumor compression within the spinal canal, the histological characteristics of the tumors, the tempo of neurologic progression and initial response to corticosteroid therapy, patient age, comorbidity, tumor extension, involvement of neighbour structures and organs, etc. spinal cord tumors constitute 2 % of all tumors and 1-3% of tumors of central nervous system. Approximately 25% of spinal cord tumors are extramedullary (25 % neurinoma and 20% meningeoma); primary intramedullary tumors comprise 10-15% and metastatic tumors 40-80%(1-3, 7-9, 12, 15, 17, 23-27, 33-39). Ambulatory patients who received surgery (decompression and stabilization of the spine when needed), are more likely to show improvement (3, 6, 9, 12-14, 17-21). Bilsky and Hufana reported improvement in 90 % of cases with extramedullary

benign tumors when totally extirpated. On the other hand for the spinal metastases the outlook remains poor, in these cases surgery is palliative. Postoperative mortality have varied from 8-11% (3, 10, 17, 21, 25). The major factors influencing postoperative complications include deficits and comorbidity. Postoperative complications incidence as per Bilsky varies from 10 to 52% and the most frequent are the venous thrombembolism, infarct, infection, bronchopneumonia, failure of the stabilization and pain. The aim of this study is to analyze the data gathered, for the patients with spine and spinal cord tumors, treated in our clinic, in order to make the necessary conclusions for more effective treatment and prevention of intra and postoperative complications.

METHODS

The records of 122 patients with spine and spinal cord tumors, who received surgery in our clinic for the period 2004-2008 were retrospectively reviewed.

Characteristics of patients:

Variable	Number
<i>Age (in years)</i>	
< 20	1
21-40	11
41-60	58
61-80	52
<i>Sex</i>	
Male	66
Female	56
<i>Presenting symptom</i>	
Pain	68
Numbness	105
Paraparesis	37
Paraplegia	44

Quadriparesis	11
Cauda equine syndrome	7
Brown-Sequard syndrome	1
Bowel or Bladder problem	62

Neuroimaging

Plain X-ray	56
CT scan	23
MRI	79
Myelography	23

Comorbidity

Hypertension	62
Heart failure	50
Diabetes	12
COPD	13
Lung carcinoma	19
Bowel adenocarcinoma	8
Breast carcinoma	6
Prostate	5
Cervical carcinoma	4
Kidney carcinoma	1
Thyroid gland carcinoma	1

The aim of surgery was decompression of the spinal cord, total removal of the tumor when possible and spinal stabilization when needed. The surgery performed is outlined below:

Hemi or laminectomy	112
Arthropediculotomy	6
Spondylectomy	4
Metal instrumentation a modo Luquez	27
Transpedicular stabilization	16
Anterior vertebrodesis	4
Vertebroplasty	3
Without stabilization	72

RESULTS

Many factors have influenced the outcome of surgical treatment. The most important are the histological characteristics of tumor, spinal segment affected and the degree of decompression.

Spinal level

C2 - C5	7
C6 - C7	6
Th1 - Th5	11
Th6 - Th8	30
Th9 - Th12	34
L1 - L5	34

Nature

Metastases	51
Myeloma	15
Lymphoma	7
Meningeoma	12
Neurinoma	3
Neurofibroma	6
Cavernous hemangioma	5
Lypoma	2
Fibrolyposarcoma	4
Mesotelioma	1
Others	14

Satisfactory postoperative outcome corresponds with the degree of decompression- total removal of meningeomas or neurinomas leads to full recovery, but decompression in cases of primary intramedullary tumors and metastases is palliative and accompanied with complications.

Patients onset of improvement

Immediate	8
With improvement at discharge	47
No improvement at discharge	53
Worsened	5
Exitus letalis	9
Pulmonary embolism	5
Heart failure	2
Bronchopneumonia	2

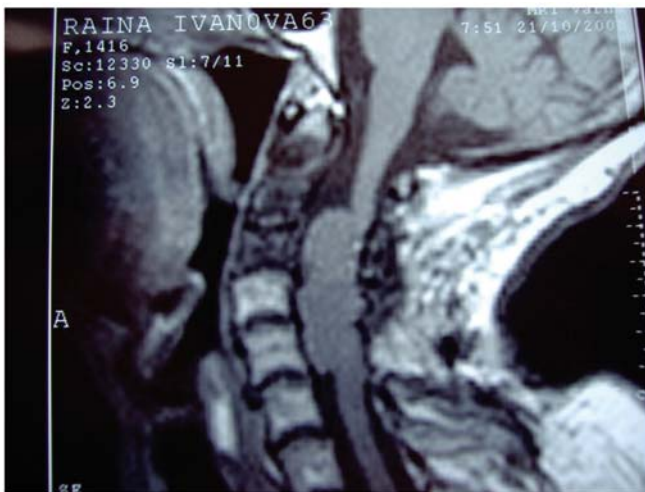
The most frequent difficulties encountered during surgery were the profuse bleeding, difficulties when undergoing spinal instrumentation due to tumor infiltration of neighbouring levels or osteoporosis. Postoperative complications include: CSF leakage- 2 cases, wound infection- 5, surgical site haematoma- 3, bronchopneumonia- 12, renal failure- 5.

DISCUSSION

The extent of tumor resection and decompression correlates directly with a good outcome. The period from the onset of first neurological symptoms till the diagnosis in 90% of our cases was 2-6weeks. This period is long enough for the development of undesired factors influencing the outcome after surgery. The same was reported in the literature by Bauer, Brotchi, Dunn, Klekamp. That's why, from 27 cases of total tumor removal, only in 8 cases we registered full recovery. The extent of excision either incomplete or biopsy was found to positively correlate with postoperative improvement; 40 cases in our study. In the last cases the improvement was temporary but we didn't realize to record the period free of complains and the development of the disease. This is because in our country we don't have yet a developed multidisciplinary approach and follow- up tools for patients suffering of this pathology.

90,5% of patients discharged without improvement were with spinal metastases. These data are approximately the same with the statistics reported from most of the authors. Postoperative complications vary 10-52% (9, 12, 15, 17, 21, 23-27, 33- 39). Different causes were reported such as: bronchopneumonia, embolism, heart failure, surgical site haematoma, failure of stabilization, infections, CSF leakage etc. 32% of our cases experienced postoperative complications. Wide range of mortality rate was reported from different authors- Cohen & Allen report a mortality rate 0-3%, Bilsky 13% and in our study 7,3 %.

Most of factors influencing surgical treatment and the outcome are well known. That's why through early diagnosis and proper treatment (surgery, radiation and chemotherapy), the complications can be avoided or at least minimized.



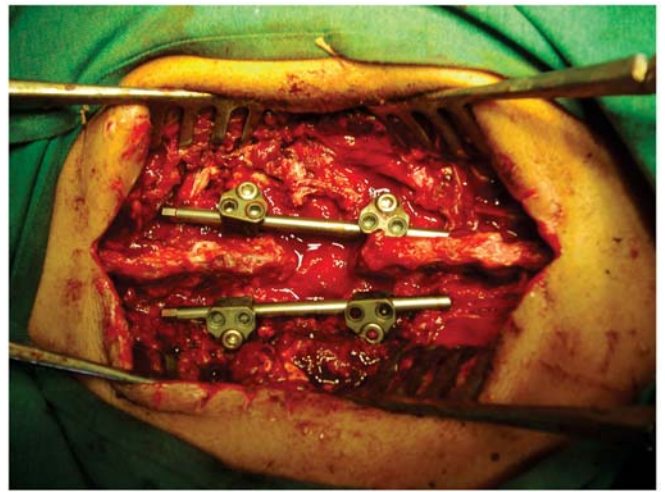
Patients with relapsed meningioma at C3 and compression myeloma.



Patient with metastasis in the body of Th7



Patients with bone metastases in the vertebral bodies of Th6 and Th7



Transpedicular stabilization in the lumbar and laminectomy after total excision of tumor extradural



Ro columns transpedicular a patient with a pathological fracture due to stabilization of the bodies of L1 and L2.

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