



## Surgical Management of Metastatic Spinal Lesions in National Cancer Center of Belarus

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### Abstract

According to different publications, nearly 96% of all spinal neoplasms are metastatic tumors. It is observed that majority (nearly 80%) of patients with disseminated malignant tumors develop spinal metastases.

**Keywords:** Surgical Management; Spinal Lesions; National Cancer Center

### Introduction

The state institution “N. N. Alexandrov National Cancer Centre” is the leading oncological institution in the Republic of Belarus providing a full range of services in the field of diagnosis, treatment, and education. N. N. Alexandrov National Cancer Centre is the major medical research institution in the Republic of Belarus.

Oncology (neurosurgical) Department of Vertebrology in National Cancer Centre of Belarus was established in February 2019.

### Case Report and Discussion

These are examples of more or less common cases that our department deals with.

Woman, 63 y.o., complaints of pain in lower thoracic - upper lumbar spine radiating to right inguinal area and worsening in vertical position.

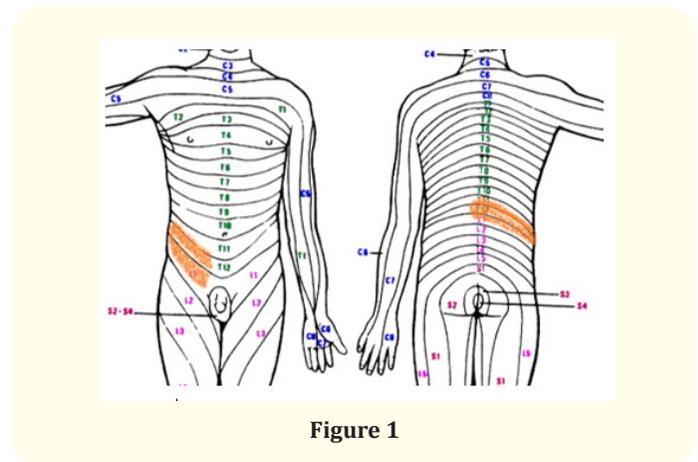


Figure 1

She underwent anti-inflammatory treatment for several months without significant improvement, was referred for consultation to our center after performing MRI and CT of the spine, esophago-gastroduodenoscopy and colonoscopy, abdominal and pelvic ultrasound.

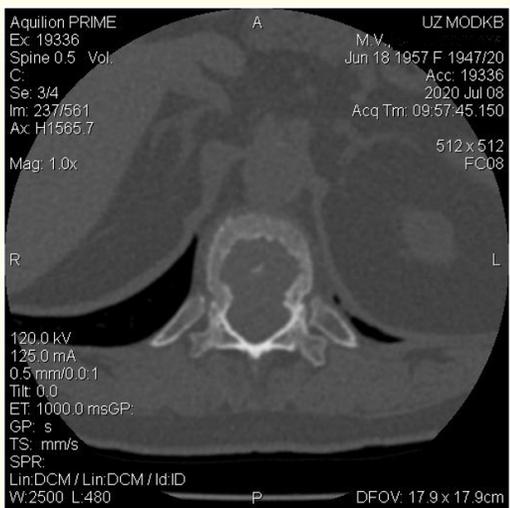
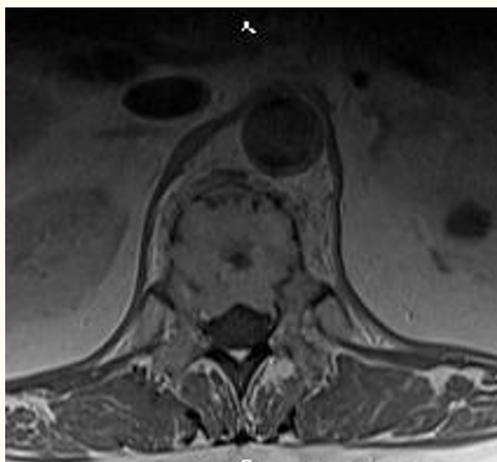


Figure 2

On admission: Hypaesthesia below Th12 dermatome, strength is full bilaterally in arms, slightly decreased strength of hip flexion from the right side. Lasegue sign is negative bilaterally.

Posture is with deepened thoracic kyphosis and flattened lumbar lordosis. Gait is steady with short steps. Heel and toe walking are normal.

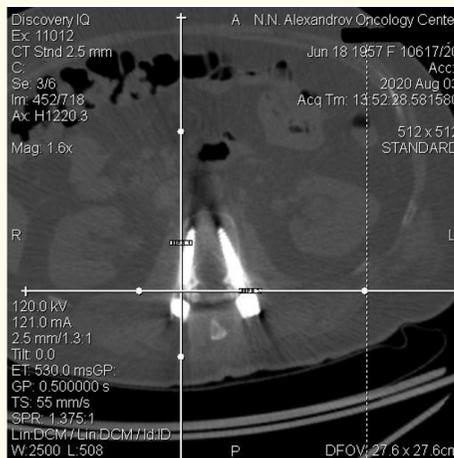
In summary, the focus in Th12 vertebra was at the time the only one. After admission, we proceeded with sternal puncture: bone-marrow cellularity was low, plasmatic cells -2.6 %↑ (normal range 0.1-1.8%), lymphocytes - 23.0%↑ (normal range 4.3-13.7%).

For the first step of treatment, our team performed posterior decompression at Th12 level with transpedicular instrumentation Th10-L2 and transpedicular biopsy from the body of Th12 vertebra. During the intervention, an urgent histological test revealed the growth of non-epithelial malignant tumor in the affected vertebra.

The preoperative pain reduced significantly and the patient was able to walk using thoracic-lumbar brace the next day after surgery.

Bearing in mind the results of histological test, a PET-CT was performed: besides focus in Th12 with SUV max = 7.5, there were some lesions in the skull bones without increased accumulation of a radiopharmaceutical agent.

On the tenth day after surgery the results of histological processing were ready. The morphological picture and immunophenotype were suitable for plasmocytoma. Immunohistochemistry: CD138+, Plasm+, MUM1+, LCA-.



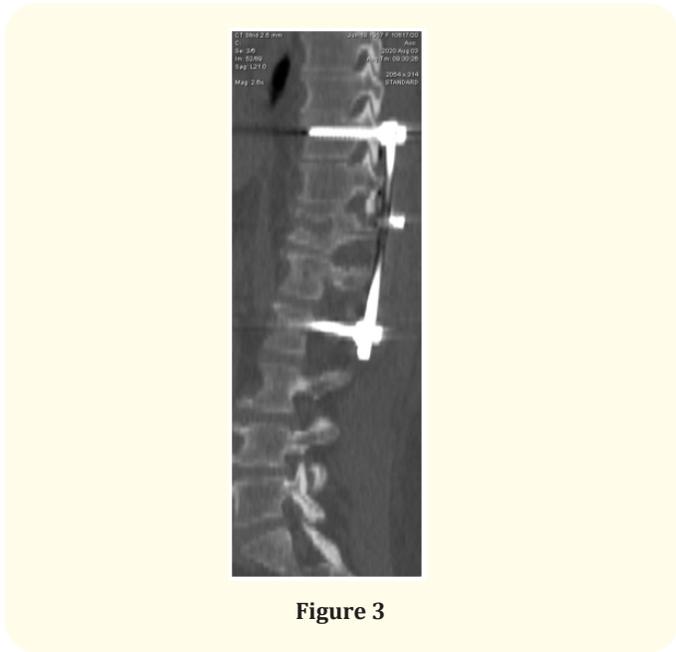


Figure 3

This woman was referred to radiologist and hematologist, and after a radio/chemotherapy treatment (which is usually characterized as quite effective [1]), we are planning to decide about the next step of surgical treatment (corpectomy of Th12 vertebra) if it will be necessary [3].

Woman, 50 y.o., with similar short-term (several weeks) history of pain in lower thoracic - upper lumbar spine radiating mostly to the right inguinal area and worsening in vertical position.

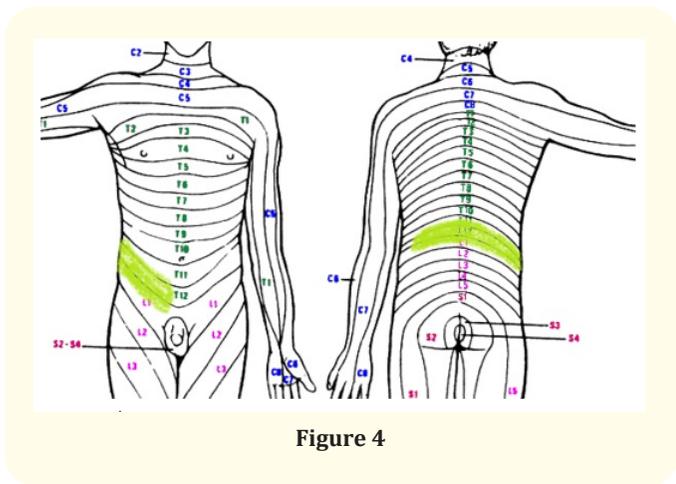


Figure 4

Before referring to our National center, the investigation began with chest X-ray and abdominal ultrasound followed by systemic CT. The results of tomography were disappointing: multiple metastatic foci in both lungs, mediastinal lymphatic nodes, left clavicle and body of Th12 vertebra with the primary tumor was thought to be located in the right kidney.

Objective findings: Mild inferior paraparesis, hypaesthesia below Th12 dermatome, the patient was not able to walk because of significant increase of pain in vertical position.

After the admission to the Department of Vertebrology, a so-nouguided needle biopsy of the right kidney was performed. The MRI picture of the affected spine is shown below.



Figure 5

As in the previous case, firstly we stabilized the pathological fracture and took the tumor sample from the body of Th12 (transpedicular biopsy Th12, posterior decompression at Th12 level with transpedicular instrumentation Th10-L2). The urgent histological test revealed appearance of clear-cell renal carcinoma.

The preoperative pain reduced and the patient was able to walk using thoracic-lumbar brace the next day after surgery.

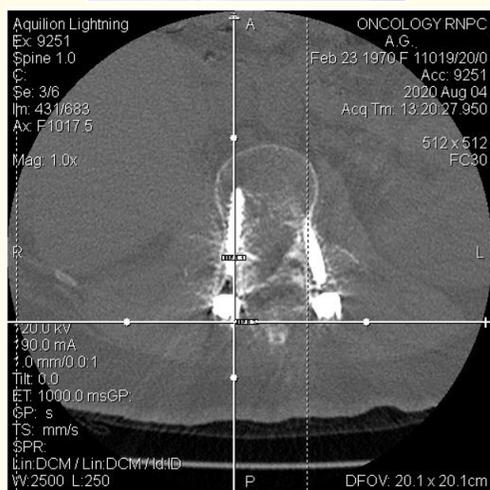


Figure 6

On the twelfth day after intervention, the histology was completed and the patient diagnosed with poorly differentiated renal carcinoma (Immunohistochemistry: panCK+, EMA+, vimentin+, CD10+, RCC-, SMA-, CD31-, CD34-, ERG-, CK7-, S100-, ki67 nearly 60%). According to TNM classification, the diagnosis looked like T4N1M1.

The further treatment options were discussed with specialists in oncology, radiology, and chemotherapy. In this case, nephrectomy is not necessary because of the expansion of the disease, it wouldn't increase the life expectancy. Malignant tumors from kid-

neys generally are non-sensitive to radiotherapy, but with palliative purpose, it might be provided on the area of affected vertebra in case of pain recurrence.

As for the next step of treatment, we put a great deal of trust in targeted therapy [2].

The possibility of the next step of surgical treatment will depend on the results of chemotherapy.

## Conclusion

These two cases look very similar, but the results of treatment and further quality and length of life may be very different. It is even more vivid for these two women, because they were admitted to our department almost at the same time. And as it was noticed by a large number of colleagues in different specialties, different cases are often encountered in pairs.

The management of spinal metastases is a challenging aspect of spine surgery, a multidisciplinary/multimodality approach to management is essential to provide optimal outcomes.

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