

Radiotherapy Alone for Malignant Spinal Cord Compression in Young Men with Seminoma

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Abstract. *Aim: Seminomas are very radiosensitive tumors. Therefore, patients with malignant spinal cord compression (MSCC) from seminoma may not require for neurosurgery in addition to radiotherapy. In this study, radiotherapy alone was evaluated in young men with MSCC from seminoma. Patients and Methods: Four young men with MSCC due to vertebral lesions from metastatic seminoma received radiotherapy alone. The impact of radiotherapy on motor function and gait function, local control of MSCC and survival were retrospectively evaluated. Results: All patients showed improvement of motor function following irradiation. All patients who were not able to walk prior to radiotherapy regained their walking ability. One-year and two-year local control rates were 100% and 100%, respectively. Survival rates at one and two years were 75% and 75%, respectively. Conclusion: Radiotherapy alone resulted in excellent outcomes. If clear indications for neurosurgery are not given, radiotherapy alone can be considered the treatment of choice for patients with MSCC from seminoma.*

Malignant spinal cord compression (MSCC) is considered an oncologic emergency that requires urgent treatment (1, 2). The most common treatment approaches are radiotherapy alone and neurosurgical intervention followed by radiotherapy. Approximately 10 years ago, a randomized study suggested that the combined approach resulted in better post-treatment motor function and a good performance status than radiotherapy alone in selected patients with MSCC from a solid cancer (3). Since the publication of that study, neurosurgery followed by radiotherapy has become much more popular for the treatment of MSCC. Despite the fact that patients with very radiosensitive tumors including germ cell tumors, such as seminoma, were

excluded from that randomized study, neurosurgery is quite often also performed in these patients (3). Thus, more studies are required to answer the question whether patients with MSCC from seminoma are more appropriately treated with neurosurgery plus radiotherapy or with radiotherapy alone. Prospective studies are quite difficult to perform and cannot be expected soon, because seminoma accounts for only approximately 0.2% of all patients developing MSCC (1, 2). In this study, the effect of radiotherapy alone was evaluated in young men with MSCC from seminoma.

Patients and Methods

Four young men (median age=30 years, range=28-32 years) presenting with MSCC due to vertebral lesions from metastatic seminoma had received radiotherapy alone. At the time of radiotherapy, all patients had involvement of only one vertebra, and other osseous metastases were not present. Further patient characteristics including time of developing motor dysfunction prior to irradiation, presence of additional hematogeneous metastases, pre-radiotherapy gait function, performance status and fractionation of radiotherapy are shown in Table I.

The impact of radiotherapy on motor function and gait function as well as control of MSCC in the irradiated parts of the vertebral column (local control) and survival were retrospectively evaluated. Motor function was evaluated prior to and one month following radiotherapy with a modified four-point scale: 0=normal strength, 1=ambulatory without aid, 2=ambulatory with aid, 3=not ambulatory (4). Improvement and deterioration of motor function were defined as a change of at least one point. Local control rates and survival rates were calculated with the Kaplan-Meier method (5).

Results

Radiotherapy provided excellent results. All patients (100%) showed an improvement of motor function following irradiation. All three patients (100%) who were not able to walk prior to radiotherapy regained their walking ability following radiation treatment. The patient who was still ambulant prior to radiotherapy maintained the ability to walk and even regained normal strength in both legs. The 1-year and 2-year local control rates of MSCC were 100% and 100%, respectively. And the survival rates at one year and two years following radiotherapy were 75% and 75%, respectively.

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Key Words: Seminoma, young men, malignant spinal cord compression, radiotherapy alone, treatment outcome.

Discussion

The results of treatment of testicular cancer including seminoma have been improved during the last decade and will likely be further improved in the following years (6-9). As a result, patients live longer and currently less common metastatic sites such as vertebral metastases leading to MSCC, may require more attention in the future. Future studies will include investigations of the most appropriate treatment regimen for these patients, namely the value of adding upfront neurosurgery to radiotherapy. In selected patients with MSCC from a solid cancer, the addition of neurosurgery can result in better functional outcomes and survival (3). However, such a benefit has not yet been demonstrated for patients with MSCC from very radiosensitive tumors such as lymphomas, myelomas and germ cell tumors including seminomas (10). Clear indications for neurosurgery include vertebral body fractures and bony fragments causing MSCC. However, if these indications are not given, radiotherapy alone is likely to be the treatment of choice. This recommendation is supported by the findings of the present study. Taking into account the limitations of its very small sample size and its retrospective design, this study showed that radiotherapy alone results in excellent results. Both the rate of improvement of motor function and the rate of freedom from a local recurrence of MSCC at two years were 100% and 100%, respectively. Survival rates were excellent as well (75% at two years). These data suggest that neurosurgery is not necessary for MSCC from seminoma if vertebral body fractures and bony fragments are absent. Furthermore, one has to be aware that neurosurgery is not infrequently associated with severe complications including wound infections, extensive bleeding, peri-operative pneumonia and thromboembolic events (3, 11, 12).

In conclusion, radiotherapy alone resulted in excellent outcomes in terms of improvement of motor dysfunction, local control of MSCC and survival. If clear indications for the addition of upfront neurosurgery are not given, radiotherapy alone can be considered the treatment of choice for these patients.

Conflicts of Interest

On behalf of all Authors, the corresponding Author states that there are no conflicts of interest related to this study.

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Table I. *Patients' characteristics.*

Characteristic	N
Time of developing motor dysfunction	
≤7 days	3
>7 days	1
Additional hematogeneous metastases	
No	2
Yes	2
Pre-radiotherapy gait function	
Ambulatory	1
Not ambulatory	3
Performance status	
ECOG 2	1
ECOG 3	3
Fractionation of radiotherapy	
10x3 Gy in two weeks	2
15x2.5 Gy in three weeks	1
20x2 Gy in four weeks	1

ECOG, Eastern Cooperative Oncology Group.

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