Brain Metastasis of Testicular Tumor with Massive Hemorrhage
—Report of Two Cases—

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Abstract

The authors report two cases of brain metastasis from testicular tumor with massive, sudden intratumoral hemorrhage. In both cases, the hemorrhage occurred during the 1st admission day and carried a high risk of fatality. Early, aggressive surgical removal is advisable before general deterioration. Postoperative chemotherapy with an agent different from the one applied to primary lesion is also recommended because of drug tolerance.

Key words: brain metastasis, testicular tumor, intratumoral hemorrhage

Introduction

Central nervous system (CNS) metastasis from testicular germ cell tumors occurs in 28.6-36% of autopsy cases.2,3,13) Since few patients are candidates for surgery, there are no established therapeutic modalities. We recently experienced two cases of brain metastasis from testicular tumor presenting with massive intratumoral hemorrhage immediately after admission. We discuss the therapeutic strategy and review the literature.

Case Reports

Case 1: A 21-year-old male had detected hardness of the right testicle for 21 months. Nine months previously, a right orchiectomy revealed a mixed tumor of embryonal cell carcinoma, teratoma, seminoma, and choriocarcinoma. For his pulmonary metastasis, he received PVB (cisplatin, bleomycin, vinblastine) chemotherapy followed by resection of the retroperitoneal lymph nodes, right middle and inferior pulmonary lobectomy, and partial resection of the right superior lobe. He was admitted to our department with a 1-month history of right motor weakness.

He had paresis and sensory disturbance of the right extremities and clear consciousness. Precontrast computed tomographic (CT) scans revealed an iso- and high-density mass within the left parietal lobe, which on postcontrast CT scans appeared homogeneously enhanced (Fig. 1).

A metastatic brain tumor was diagnosed, and tumor removal planned. However, immediately after admission, he suffered a generalized convulsion followed by rapid deterioration. He became semicomatose and the left pupil showed mydriasis. Precontrast CT scans revealed massive intratumoral hemorrhage with perifocal edema in the left parietal lobe (Fig. 2).

An immediate left parietotemporal craniotomy exposed a reddish, gray mass with peritumoral hemorrhage in the white matter. As much tumor and hematoma as possible were removed. The mass did not adhere to the dura. Histological examination demonstrated embryonal cell carcinoma (Fig. 3).
His consciousness cleared by the following day, and the right side weakness gradually improved.

However, he refused systemic chemotherapy and immunotherapy, and eventually died 3 months later of general prostration.

**Case 2:** A 24-year-old male presented with right testicular mass 8 years ago and received a right orchietomy 1.5 months previously. Histological examination revealed a mixed tumor of seminoma, embryonal cell carcinoma, and choriocarcinoma. Pulmonary metastasis was diagnosed and PVB chemotherapy given. He underwent total gastrectomy because of gastric metastasis. He then developed left hemiparesis and was admitted to our department 18 days later.

Neurological examination found no deficit except mild hemiparesis of the left extremities. Precontrast CT scans revealed homogeneous high-density masses, two in the right frontal lobe and one in the right parietal lobe (Fig. 4).

On the 1st day, he suddenly became semicomatose followed by left hemiparesis deterioration. His right pupil was larger than the left. Precontrast CT scans found intracerebral hemorrhage in the right frontal lobe and intraventricular hemorrhage (Fig. 5).

The two discrete masses were totally removed via a right frontal craniotomy. The tumors were elastic-hard. Hematoma was mainly present in the surrounding tissues. Ventricular drainage was also carried out. Histological examination demonstrated choriocarcinoma (Fig. 6).

His consciousness gradually recovered but without improvement in hemiparesis. He did well and the lung metastasis size was reduced following chemotherapy with massive doses of methotrexate and leucovorin. However, 4 months later, he died of progressive general prostration.
Recent advances in chemotherapy, such as PVB therapy have increased the survival in cases of testicular carcinoma. However, the effectiveness of chemotherapy against brain metastasis from this tumor is restricted by poor penetration of the blood-brain barrier. Radiation therapy is also limited and cannot eradicate a tumor except for small foci. Therefore, a surgical strategy has become mandatory.

Kobayashi et al. recommended surgery in cases of rapidly deteriorating neurological symptoms where no response to chemotherapy and/or irradiation was achieved. Some authors, however, considered surgery more important than irradiation. Jelsma and Carroll reported better results with surgical removal before whole-brain irradiation and PVB therapy. In contrast to non-CNS metastatic germ cell tumor, brain metastasis responds to neither chemotherapy nor radiation therapy, intratumoral hemorrhage has catastrophic consequences, and large doses of anticancer agents entering the CNS through the blood-brain barrier are sometimes toxic. Rustin and Bagshawe suggested that hemorrhage is caused by tumor lysis during chemotherapy. The massive, sudden intratumoral bleeding, as observed in our cases, is likely to be fatal. Therefore, early, more aggressive surgical removal before general deterioration occurs is advisable.

Postoperative chemotherapy is essential to prevent
systemic dissemination of tumor cells. In Case 2, large doses of methotrexate and leucovorin ameliorated systemic metastasis. Metastatic tumors sometimes acquire drug tolerance, so a different agent is recommended for induction therapy. Newlands et al. and Rustin et al. recently introduced a regimen of etoposide, methotrexate, and actinomycin/vincristine and cyclophosphamide, which eliminated CNS metastasis in 13 of 18 patients (72%). Athanassiou et al. found that 94% of patients diagnosed with brain metastasis from testicular germ cell carcinoma already had radiologically detectable pulmonary metastasis, because pulmonary and brain metastases have a common hematogenous route of metastasis. Therefore, CT or magnetic resonance imaging investigations must be made in patients with pulmonary metastasis from testicular tumor, because of the possibility of brain metastasis.

References

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