

Meningeal Carcinomatosis in Bladder Transitional Cell Carcinoma

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Abstract

Meningeal carcinomatosis is a rare event in bladder transitional cell carcinoma. In this report, we present a man with transitional cell carcinoma who developed brain metastasis followed by spinal and leptomeningeal involvement.

Key words: Meningeal carcinomatosis, carcinoma, transitional cell, radiotherapy

Introduction

Local recurrence is a common finding in transitional cell carcinoma (TCC), and metastasis to other organs may occur. The lymph nodes, liver, bones, and adrenal glands are the most common sites of metastasis ⁽¹⁾. Although central nervous system metastasis can occur in 0.4% to 12% of the cases who receive chemotherapy, most of them involve the parenchyma of the brain and leptomeningeal and spinal metastasis have a very low incidence ⁽²⁾. We describe a 69-year-old man with a history of bladder TCC who first developed parenchymal brain metastasis followed by leptomeningeal metastasis, and finally died due to the complications.

Report of the case

A 69-year-old man was referred to our center after subtotal brain metastasis resection. He had a history of bladder TCC four years ago. The first sample by transurethral resection (TUR) showed high grade TCC but there was no muscular layer in the sample. Then, radical cystectomy was performed (without adequate lymphadenectomy, only two lymph nodes were resected), and the final diagnosis was low grade T1 tumor (T1N0M0). He did not receive any adjuvant therapies. One month before brain surgery, he developed gait disturbance and brain CT scan revealed a right parafalx mass with severe brain edema. Surgical resection was performed and micrographs of the brain mass revealed metastatic carcinoma with typical

features of TCC, including ramifying papillae, a high nuclear/ cytoplasmic ratio and a moderate mitotic activity. There were extensive foci of necrosis (Fig-1) therefore, the pathology confirmed metastatic TCC. Post surgical MRI showed tumor residue with most probably postoperative meningeal irritation. Abdominopelvic and thoracic CT scans and laboratory tests were unremarkable. He received 4000 cGY whole brain radiation, and the MRI repeated one month after radiation therapy showed complete radiological response.

Forty five days later, he complained of right upper extremity weakness and cervical and back pain. Brain and spinal MRI (Figure 2) showed multiple enhanced lesions due to leptomeningeal relapse. Whole spinal radiation therapy at a dose of maximum 3300 cGY concurrent with 2 mg vincristine weekly was used for palliation. Finally, he died 8 months after brain metastasis.

Discussion

Bladder cancer can spread to distant organs, most commonly the lungs, bone, liver, and brain through lymphatics and blood stream. The prognosis of metastatic bladder cancer, as in other metastatic solid tumors, is poor, with a median survival only 12 months ⁽³⁾. Response rates of over 50% can be achieved in patients with metastatic transitional cell carcinoma of the bladder treated with cisplatin-based chemotherapy. With prolonged survival, intraparenchymal brain metastases may

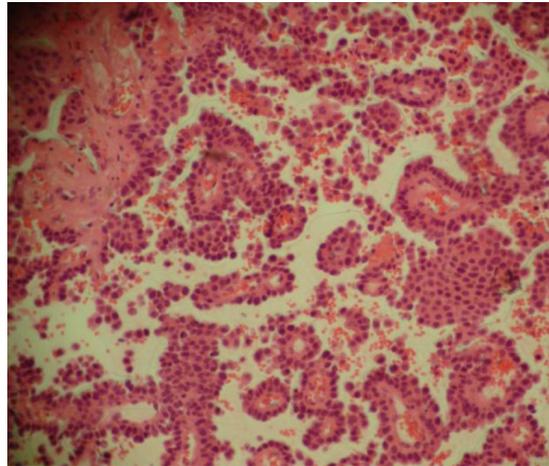


Figure 1:H&E staining of the metastatic brain lesion shows typical TCC microscopic features.

occur in as many as 12% of the patients who receive chemotherapy⁽²⁾. The central nervous system has traditionally been considered as a sanctuary for neoplastic cells due to the blood–brain barrier impermeability for systemic chemotherapy⁽¹⁾. In our patient, brain metastasis occurred without previous chemotherapy and despite radical cystectomy that showed a low grade tumor.

Leptomeningeal metastasis (menigeal carcinomatosis), is the seeding of cancer cells into the central nervous system (CNS) via the cerebrospinal fluid. The hallmark of carcinomatous meningitis is multifocal cranial nerve and spinal root lesions. Carcinomatous meningitis is diagnosed in 1-5% of patients with solid tumors. The most common tumors to spread to the meninge are breast carcinoma, lung carcinoma and melanoma.

Leptomeningeal involvement has been estimated to occur in 2.5–5% of all breast cancers, % 9–25 of small cell lung cancers, and 23% of melanomas⁽⁴⁾. According to a report by Uncu et al. only 23 cases of carcinomatous meningitis associated with bladder cancer were seen until 2010⁽⁵⁾. In most of the previous cases, carcinomatous meningitis presented without any evidence of brain parenchymal lesions, while in our case a solitary brain metastatic lesion was first identified, which showed a complete response to surgery and radiation therapy on MRI. However, only 45 days later, spinal seeding and diffuse leptomeningeal involvement was detected. In most previous cases, there were more than one metastatic site⁽⁶⁾, but in our patient, CNS involvement was seen without any other site of metastasis.

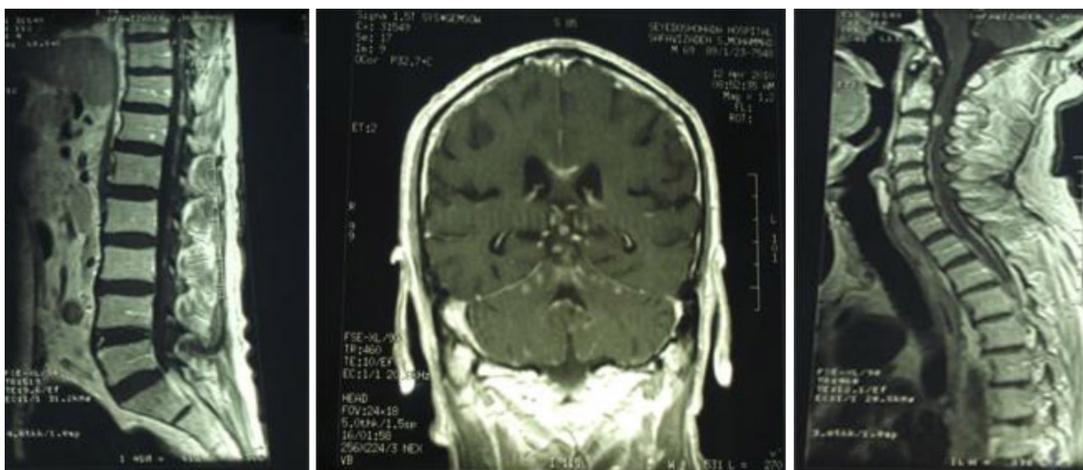


Figure 2: Brain and spinal diffuse metastases.

The treatment of carcinomatous meningitis remains controversial and no straightforward guidelines exist for its management in the literature ⁽⁵⁾. There are sparse data on the therapy of carcinomatous meningitis from bladder cancer. According to a literature review published by Bruna et al, although most patients undergo intrathecal chemotherapy and some of them receive adjuvant radiotherapy, survival does not exceed 9 months ⁽¹⁾. In our patient, palliative radiotherapy relieved the symptoms but the survival was very short.

Conclusion

Carcinomatous meningitis associated with bladder cancer is a very rare finding. Although most patients undergo intrathecal chemotherapy and some of them receive adjuvant radiotherapy, survival has not been reported to exceed 9 months. In our patient, palliative radiotherapy relieved the symptoms but the survival was very short.

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