

Brain metastasis from urachal carcinoma: the importance of locally aggressive treatment

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Abstract

We present the case of a 52 years old woman who developed multiple brain metastasis after cystectomy with anterior exenteration and chemotherapy. She received whole-brain radiotherapy with 20 gray in 5 sessions. On magnetic resonance imaging 8 weeks after radiotherapy she showed a regression of some lesions while others responded only partially. This case-report and a review of the literature show the importance of aggressive local treatment in patients with brain metastasis from urachal carcinoma.

Introduction

Bladder adenocarcinoma is an uncommon malignant tumor accounting for less than 2% of all the malignant urinary bladder tumours. It includes primary bladder adenocarcinoma and urachal adenocarcinoma. Urachal carcinoma is a carcinoma derived from urachal remnants. The vast majority of urachal carcinomas are adenocarcinomas; but urothelial, squamous and other carcinomas may also occur. Urachal adenocarcinoma is far less common than non-urachal adenocarcinoma of the bladder, only 10% are of urachal origin and patients are usually younger.¹ Urachal adenocarcinoma occurs slightly more in men than in women, with a ratio, of about 1.8:1. A recent population based analysis from a neighboring province (Ontario) identified 40 cases in 25 years. The incidence of detection was therefore 0.18 new cases per 100,000 residents yearly, the median age was 52 years.²

We report a case of brain metastasis in a patient with poor response to whole brain radiotherapy.

Case Report

A 52 years old woman had a partial cystectomy of the dome of the bladder followed 9 months later by a cystectomy with anterior exenteration. During follow-up presence of a pulmonary nodule measuring 2.5 cm was noted. The patient had stopped smoking about 20 years ago after a 10 pack year exposure. A transthoracic core biopsy confirmed the histology as being identical to that of the tumor in the bladder. Histology revealed an adenocarcinoma of mixed type, with enteric, mucinous, and signet ring cells components positive for CK7, CK 20, CDX-2 and B-catenin (membranous and cytoplasmic staining with no nuclear expression) and negative for TTF-1, EGFR-wild type and without ALK-1 rearrangement. Within the clinical context of a mass at the bladder dome, the diagnosis of urachal carcinoma was therefore the most probable. The patient then received 4 cycles of chemotherapy containing 5-FU, Leucovorin, Cisplatin and Gemcitabine.³ Four months later the patient received pelvic radiotherapy (20 gray in 5 sessions) for enlarged pelvic lymphnodes with intrapelvic nerve compression (max 4.4 cm). During radiotherapy she presented with neurological symptoms. A contrast enhanced magnetic resonance imaging (MRI) confirmed the presence of 6 intracerebral lesions showing intense enhancement and large surrounding edema. The patient then received whole-brain radiotherapy with 20 gray in 5 sessions. Less than a month after radiotherapy she presented with massive neurological deterioration. A second MRI 8 weeks later showed a regression of some lesions while others became hypointense after injection of gadolinium. The main lesion decreased from 3.5 to 3.26 cm and showed signs of intralesional hemorrhage as well as peripheral enhancement. Other lesions also became hypo-intense and showed enhancement.

Shortly after she developed pancolitis and pelvic, retroperitoneal, hepatic progression associated with radiological signs of peritoneal carcinomatosis. Considering a decline to a performance status of 4 of the Eastern Cooperative Oncology Group (ECOG) scale, it was decided to continue palliative care with no further anticancer treatment. She died less than 2 months after the second MRI.

Discussion

Known prognostic factors in urachal carcinoma are operative treatment, well differentiated tumors, T-stage and negative surgical margins.⁴⁻⁶ Compared to non-urachal adenocarcinoma, urachal carcinoma are more frequent

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in women, although another report found the contrary.⁵ Patients are usually younger at diagnosis and have a better prognosis⁷ than with non-urachal adenocarcinoma. Outcome in a non-metastatic setting with partial cystectomy and umbilectomy seems to show the same results as radical cystectomy.^{6,8} As long as the cancer hasn't invaded abdominal organs or seeded the peritoneal cavity, a majority can be cured.⁶ Therefore, Herr *et al.*⁶ suggest replacing the different staging systems for urachal carcinoma by simply dichotomizing patients on the surgical specimen into confined to the urachus, bladder and perivesical tissue *vs.* intraperitoneal spread of disease.

Metastatic disease is very aggressive. Herr *et al.*⁶ reported a median overall survival from the diagnosis of metastatic disease of 17 months. And Ashley *et al.*⁴ reported that most patients died from their metastatic disease a median of just over 1 year from the diagnosis of metastatic disease. Our here described patient had aggressive disease that lead to her death about 15 months from the diagnosis of metastatic disease and less than one year after the start of chemotherapy. The value of chemotherapy in the metastatic setting is unclear. Most chemotherapy regimens are 5-FU and Cisplatin-based,⁹ as our patient.

The M.D. Anderson analysis of 42 cases in 16 years found a median survival of 46 months and 24 months for patients with metastatic disease.³ There is very little literature about brain metastasis in urachal carcinoma. Brain metastasis are not rare; M.D. Anderson reported that 5/26 patients with metastatic urachal carcinoma had brain metastasis.⁹ This report did unfortunately not mention the treatment modality for their brain disease. And the Mayo Clinic reviewed 66 patients, 6% (n=2) of the patients with metastatic disease had brain metastasis.⁴ Our

present case underlines the aggressiveness of brain metastasis in urachal carcinoma and the poor response to conventional whole brain External Beam Radiation Therapy (EBRT) in this particular case. Our experience is supported by the report from Tewari *et al.*¹⁰ Their patient had a resected singular metastasis without adjuvant EBRT. The patient later died of extracranial disease. And Kaido *et al.*¹¹ treated a patient with gamma knife radiosurgery (GKS) and surgical resection. On MRI 6 weeks post GKS the lesions disappeared but on MRI 3 months after GSK there were 10 different lesions, treated again with GKS.

Conclusion

We believe it is important to treat brain metastasis aggressively with either surgery followed by whole brain EBRT or with whole brain EBRT and stereotactic radiosurgery to increase local control.

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