



# CASE REPORT

## Favorable Response to Chemotherapy in a Patient of Urachal Adenocarcinoma with Peritoneal Metastasis

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### Introduction

Urachal adenocarcinoma is a rare cancer that arises from the embryological remnant of the urogenital sinus and allantois and is thought to comprise less than 1% of bladder cancers.<sup>1,2</sup> Mucinous adenocarcinoma is the most common subtype and presentation is similar to that of urothelial cancers, with hematuria and abdominal pain. Surgical resection is the first line treatment and better outcomes are seen with less advanced stage at diagnosis. Efficacy of chemotherapeutic regimens are being investigated; current five year survival rates are less than 50%.<sup>1,2</sup> We present this rare case of a gentleman diagnosed with mucinous urachal adenocarcinoma with peritoneal metastasis.

### Case Report

A 70-year-old man was referred to our oncology clinic for an urachal tumor with peritoneal involvement diagnosed after inpatient workup for new onset ascites. The patient quit smoking 40 years prior and rarely drank alcohol. He had neither a family history of cancer nor any exposure to known environmental carcinogens.

The physical exam was notable for abdominal distension and ascites, causing dyspnea and hypoxia. Neither the liver nor the spleen was palpable, and there was no lymphadenopathy. Abdominal paracentesis was performed. Cytological specimen showed cellular fluid with atypical cells. Staining with mucicarmine and periodic acid-Schiff after digestion (PAS-D) showed extra-cellular mucin

and small intra-cytoplasmic globules, which supported a diagnosis of mucinous adenocarcinoma (Figure 1).

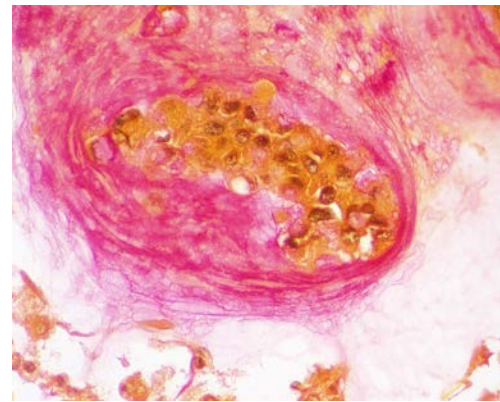


Figure 1. Cytologic specimen showed mucin-producing adenocarcinoma.

Immunohistochemistry showed tumor cells that were positive for CK-7 and CEA-m, and negative for CK20 and CD15. The absence of CK20 staining indicated that a primary GI malignancy is unlikely. Evaluation of abdomen and pelvis by computed tomography (CT) showed extensive ascites. The entire omentum had soft tissue streaking. A large, partly calcified mass extended from the dome into the urachal process measuring 7.3 cm x 4.3 cm x 8 cm (Figure 2). These histological and radiological findings confirmed the diagnosis of urachal carcinoma with peritoneal metastasis. Tumor stage was T4N0M1. A urologist recommended that surgical resection was not possible and referred the patient to oncology for

chemotherapy. Prior to chemotherapy, the patient was experiencing pain, dyspnea, and inability to carry out activities of daily living. Carcinoembryonic antigen (CEA) levels were 18.3 ng/ml. The patient was started on FOLFOX6, which consists of oxaliplatin 85 mg/m<sup>2</sup> intravenous (IV) infusion with leucovorin (LV) 400 mg/m<sup>2</sup> over two hours, followed by a 400 mg/m<sup>2</sup> bolus of 5-FU, followed by an IV infusion of 5-FU 2400 mg/m<sup>2</sup> for 46 hours. This regimen was repeated every two weeks.

He responded well as abdominal distension, pain, and dyspnea decreased, performance status improved, and CEA (Figure 3) decreased after the second cycle.



Figure 2. CT scan demonstrating calcific urachal mass.

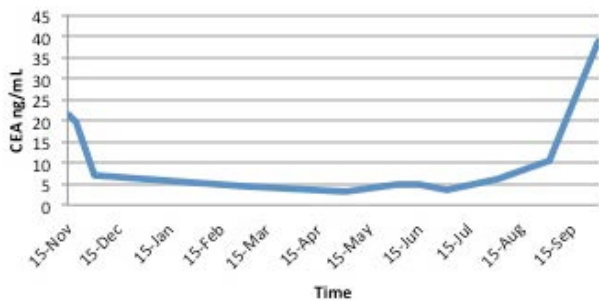


Figure 3. Carcinoembryonic antigen (CEA) response to 5-FU/FOLFOX treatment.

A CT showed decrease in ascites and no increase in tumor size after third cycle. After cycle 14, the patient developed numbness in the fingers, which was attributed to chemotherapy-induced peripheral neuropathy. In cycle 15,

oxaliplatin was stopped, but leucovorin and 5-FU were continued. At this point, CEA levels plateaued at 3.45 ng/ml (Figure 3). Four more cycles with 5-FU and leucovorin were given. After cycle 18, CEA started to rise and CT showed slight increase in size of tumor. After cycle 22, CEA increased further to 10.4-ng/mL and tumor size also continued to increase. However, the patient’s symptoms were well controlled. Second line chemotherapy with irinotecan was started, but the patient was unable to tolerate it due to severe vomiting. The patient opted for hospice and later died.

**Discussion**

The urachus is a remnant of the channel between the fetal urinary bladder and umbilicus. It is formed from the allantois between the 5<sup>th</sup> and 7<sup>th</sup> week of gestation and typically is sealed and obliterated by the 12<sup>th</sup> week. It is identified postnatally as the medial umbilical ligament.<sup>1</sup> Failure of the urachus to seal may result in patent urachus, cyst, fistula, diverticulum, or sinus. Urachal cancer may develop from these urachal remnants, and adenocarcinoma occurs in the vast majority of these cases, often mucin-producing.<sup>2,3</sup> It is a rare cancer and constitutes less than 1% of bladder tumors.<sup>4</sup>

Risk factors are not well defined and do not appear to be related to bladder carcinogens.<sup>5,6</sup> Urachal adenocarcinoma is more common in men and onset is most often during middle age. Gross or microscopic hematuria is the most common presenting symptom, though abdominal pain, fullness, and other urinary symptoms have been reported.<sup>3,7,8</sup>

The Sheldon criteria represent the significant clinical and pathological characteristics of urachal cancer. These include the location of the tumor in the bladder dome or anterior wall, evidence of a sharp demarcation between the tumor and surface epithelium, the absence of cystitis, and exclusion of primary adenocarcinoma located elsewhere that has spread secondarily to bladder.<sup>9-13</sup> If a biopsy of the bladder dome or tumor reveals adeno-

carcinoma, urachal cancer should be suspected, and diagnosis may be confirmed with immunohistochemistry.<sup>12,14</sup>

Urachal adenocarcinoma and colonic adenocarcinoma are histologically similar and associated with elevations in CEA and CA 19-9. No molecular markers have been discovered that have any prognostic implications.<sup>7</sup> Urachal adenocarcinoma commonly recurs, often with peritoneal carcinomatosis, as well as metastasis to liver and lung. Surgical resection is the only curative treatment and includes complete resection of the tumor, urachus, and umbilicus as well as pelvic lymph node dissection.<sup>3,15-19</sup>

The Sheldon TNM staging system or the Mayo staging system may be used for prognosis, both are about equally efficacious.<sup>7</sup> Negative surgical margins and no lymph node involvement are good prognostic indicators. Median survival is 48 months, with five year overall survival rate of 45%.<sup>5</sup> However, presence or absence of metastasis affects survival,<sup>11</sup> with 61% relative five-year survival in patients without metastatic disease, versus 15% relative five-year survival in patients with metastatic disease.<sup>5</sup> Chemotherapy may improve survival in patients with metastasis or lymph node involvement.<sup>16</sup>

There is no established chemotherapy regimen for metastatic urachal carcinoma, but chemotherapy regimens used for colonic adenocarcinoma have been tried.<sup>9,16</sup> Regimens of 5-FU and cisplatin have shown about 40% response in some studies.<sup>16,20</sup> Efficacy of chemotherapy regimens are being investigated.<sup>3,19,21-23</sup>

## Conclusion

Urachal adenocarcinoma is a rare cancer that occurs most often in middle-aged men. Surgical resection may provide cure in patients with early stage disease but chemotherapeutic responses are low and most of short duration. This case represented a significant response to the FOLFOX regimen.

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