

# Mucinous adenocarcinoma of the bladder: A case report and review of the literature

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**Abstract.** Mucinous adenocarcinoma of the bladder is rare. The most common symptoms are hematuria, suprapubic pain and dysuria. The patient in the present case was a 59-year-old female who presented with a tumor sized ~5.0x3.4 cm, located in the anterior bladder wall, which was pathologically diagnosed as mucinous bladder adenocarcinoma. The stage at presentation was considered to be advanced and inoperable, due to extensive local invasion. For this type of cancer, early diagnosis is crucial. If the cancer is limited to the bladder, the survival rate may exceed 75%. Thus, for patients with confirmed or highly suspicious bladder mucinous adenocarcinoma, radical bladder cancer resection is required. The 5-year survival rate of this type of cancer is 35-55%. In the present case, the cancer of the patient was considered inoperable and 3 months later she succumbed to the disease.

## Introduction

Bladder cancer is a very common cancer of the urinary system and the ninth most common type of cancer worldwide, with a reported 386,000 new cases leading to 150,000 deaths worldwide in 2014 (1). The majority of bladder cancer cases (90-95%) are urothelial carcinomas, with squamous cell carcinoma and adenocarcinoma representing only 3 and 2% of the cases, respectively (2,3). The mucinous adenocarcinoma subtype is extremely rare (4). According to a previous study, there is a progressive change from mucinous metaplasia to mucinous adenoma to mucinous adenocarcinoma (5). Patients with bladder exstrophy and urachal remnants are at higher

risk of developing bladder adenocarcinoma (6). It was also suggested that chronic inflammatory processes of the bladder mucosa induce metaplastic changes to the more protective squamous cell or glandular-type epithelium (7).

Bladder adenocarcinoma is resistant to chemotherapy and radiation, and surgery is currently considered the most effective treatment option (8). Thus, early diagnosis is crucial; however, early diagnosis may be difficult, as the clinical characteristics of bladder mucinous adenocarcinoma are similar to those of other bladder cancers. The most common symptoms are hematuria, suprapubic pain, and dysuria (9). The most effective diagnostic investigations are urinary cytology, cystoscopy, and biopsy followed by histopathological evaluation. Due to the rarity of this tumor, and the relative lack of clinical reports, we herein report the case of a patient with mucinous adenocarcinoma of the bladder to help elucidate the characteristics of this tumor.

## Case report

The patient was a 59-year-old female, menopausal, non-smoker and non-drinker, who presented with epigastric pain for 5 months. The computed tomography (CT) scan of the abdomen revealed a mass located in the anterior bladder wall, sized 5.0x3.4 cm. The surrounding bladder wall was thickened, with no abnormal findings in the pelvic cavity (Fig. 1). Transurethral resection of the bladder tumor with electrocautery was undertaken to investigate the tumor. The pathological results revealed the presence of a significant amount of mucus, with irregular cell cords surrounding the mucus pools. Therefore, the suspected diagnosis was mucinous bladder adenocarcinoma (Fig. 2).

Radical resection and bilateral ureterostomy was planned; however, when the abdominal cavity was opened, the tumor was found to have invaded the greater omentum and peritoneum. Therefore, the cancer of the patient was considered as advanced, with significant local invasion and, thus, inoperable. Three months later, the patient succumbed to the disease.

## Discussion

Mucinous adenocarcinoma of the bladder is a rare type of cancer, accounting for <2% of all bladder cancers (10). It usually

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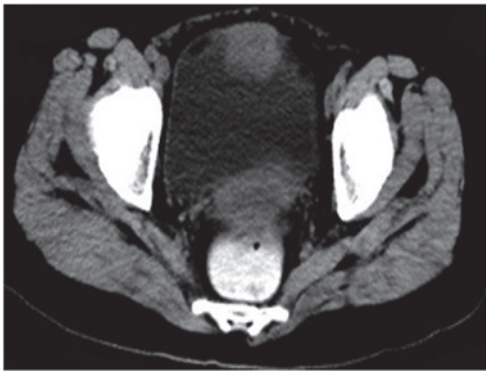


Figure 1. A mass located in the anterior bladder wall was identified on computed tomography, sized 5.0x3.4 cm. The surrounding bladder wall was thickened. There were no abnormal findings in the pelvic cavity.

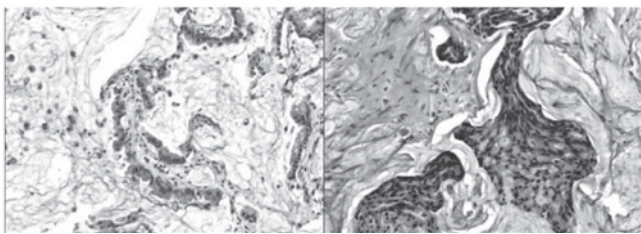


Figure 2. On histological examination, the tumor contained copious amounts of mucus, with irregular cell cords surrounding the mucus pools.

appears at the bladder dome, trigone and lateral wall. There are three hypotheses regarding the histological origin: The first is urachal remnants in the bladder; the second is a vestigial embryonal gland in the transitional epithelium of the bladder; and the third is the transitional epithelium of the bladder undergoing glandular metaplasia. Glandular cystitis is widely considered as a precancerous condition for bladder adenocarcinoma. The mucosa in bladder adenocarcinoma is not smooth, resembling edematous surface villi, or even papilloma-like changes on cystoscopy. The accumulation of secretions and associated infection may promote the development of adenocarcinoma.

As the adenocarcinoma cells secrete copious amounts of mucus, mucous floccules may be discharged from the bladder during micturition or cystoscopy. The main primary symptom is hematuria, with or without signs of irritation of the bladder. A proportion of the patients may only present with signs of bladder irritation and difficulty urinating.

Distinguishing between mucinous bladder adenocarcinoma and urachal carcinoma is crucial, but may be challenging, as their presentations may be similar. The primary clinical signs of bladder adenocarcinoma are hematuria and dysuria, whereas mucusuria is observed in ~90% of urachal carcinomas. Furthermore, the treatment of urachal carcinoma is partial cystectomy with en bloc resection of the urachus, rather than radical cystectomy. In addition, urachal carcinoma has a better prognosis and high survival rate compared with mucinous adenocarcinoma of the bladder (11).

The prognostic factors of the cancer include tumor stage, grade and subtype. According to a previous study, if the cancer is limited to the bladder, the survival rate may exceed 75% (6). At this stage, the ultrasound appearance may resemble urinary

tract infection (6). Grignon *et al* identified 5 subtypes of bladder adenocarcinoma: i) Papillary; ii) mucinous; iii) signet-ring cell; iv) adenocarcinoma not otherwise specified; and v) mixed. The signet-ring cell type has a poorer prognosis compared with that of the other types of adenocarcinoma (12).

The growth pattern of adenocarcinoma cells mainly involves infiltration into the deep muscular layer; thus, cystoscopy and B-mode ultrasound may be unable to assess the extent of infiltration. Therefore, the majority of bladder mucinous adenocarcinoma patients are stage T2 or T3 at diagnosis.

When a tumor is identified at the bladder dome, trigone or lateral wall, or in patients presenting with mucous floccules discharged from the bladder during micturition or cystoscopy, the presence of bladder adenocarcinoma should be taken into consideration. Tumor tissue biopsy and CT are required. Several random biopsy samples and regular follow-up visits are also required for patients with glandular cystitis. Bladder adenocarcinoma is resistant to chemotherapy and radiation; thus, for patients with confirmed or highly suspicious mucinous adenocarcinoma of the bladder, timely radical resection is warranted.

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