CASE REPORT

A very rare localization of breast carcinoma metastases in the urinary bladder wall

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Summary

Introduction: As a widespread malignancy in women throughout the world, breast cancer has an extremely high incidence and mortality rate and therefore poses a serious public health concern. Metastasis of breast carcinoma in the urinary bladder wall poses a challenge in diagnosis because it is a rare and sometimes asymptomatic disease.

This paper aims to present a rare case of urinary bladder metastasis originating from invasive lobular breast carcinoma and to emphasize the importance of recognizing atypical metastatic sites.

Case Report: A 58-year-old woman with a three-year history of lobular carcinoma of the right breast presented with urinary symptoms and bilateral hydronephrosis. The initial tumor was triple-negative, staged T4bN3M0. Following neoadjuvant chemotherapy (anthracyclines and taxanes), radiotherapy, and modified radical mastectomy. The histopathological assessment of tumor response to therapy: almost complete response (pNCR), and two of ten lymph nodes were positive for metastases. The treatment was continued with Capecitabine in an adjuvant approach (8 cycles), and the patient remained asymptomatic for two years. Subsequently, she developed urosepsis and was hospitalized for bilateral hydronephrosis and renal calculi. Imaging (CT) revealed retroperitoneal lymphadenopathy, and cystoscopy showed bullous edema of the bladder wall. The histopathological examination after TUR showed infiltratory carcinoma of the urinary bladder wall, and immunohistochemical staining was positive for GATA3, GCDFP-15, CDX2, and Mamaglobin. It was concluded that it was a metastasis of breast carcinoma in the urinary bladder wall.

Conclusion: Despite therapeutic advances, prognosis remains poor. Awareness of this unusual metastatic pattern is crucial for timely recognition, accurate diagnosis, and multidisciplinary management.

Keywords: breast cancer, metastases, histopathological examination, treatment

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INTRODUCTION

The metastasis of breast carcinoma in the bladder wall is a very rare disease worldwide. In 2024, approximately 310,720 new cases of invasive breast cancer and 56,500 cases of DCIS were diagnosed among women in the United States, and around 42,250 women died from the disease (1). When we see a breast cancer patient with urinary symptoms, we need to think about the possibility of that patient having metastasis of breast carcinoma in the bladder wall. In most cases, fatal outcomes in breast cancer are associated with metastases of the primary tumor, which most often affects bones, lungs, liver, and brain. Secondary tumors of the urinary bladder account for less than 2% of all urinary bladder cancer cases; there is a high incidence of direct invasion of the bladder by malignant tumors originating from other types of pelvic cancer (for example, cervical, prostate, or colorectal). It is assumed that the cause of metastatic spread is vascular tumor seeding (in contrast to lymphatic spread), with a tumor embolus going through the lung vascular system and into the abdominal aorta, finally reaching the bladder (2).

The symptoms caused by bladder metastases vary from asymptomatic manifestations to gross hematuria, obstructive uropathy, and renal failure (3, 4) metastasis (5).

Invasive lobular carcinoma (ILC) is more frequently associated with this manifestation compared to invasive ductal carcinoma (IDC), likely due to its diffuse infiltration pattern and loss of E-cadherin expression. Clinical presentation is often nonspecific and includes hematuria, dysuria, urinary frequency, or obstructive uropathy (5). Diagnosis relies on a combination of imaging, cystoscopy, histopathology, and immunohistochemistry, with markers such as estrogen receptor (ER), progesterone receptor (PR), GATA3, and mammaglobin confirming breast origin, while urothelial carcinoma markers remain negative.

Treatment is primarily systemic, guided by receptor status, and includes endocrine therapy, HER2-targeted agents, or chemotherapy. Local management, such as transurethral resection or ureteral stenting, may provide palliative benefit. Hormone-positive breast carcinomas respond better to therapy and have a longer time without progression of the disease. Radiotherapy can be used to control bladder bleeding (6).

Therefore, it is very important to establish a detailed diagnosis in patients with breast cancer who have urinary symptoms: bladder US, CT scan of the abdomen, cystoscopy with possible biopsy or resection. We will report a case of bladder metastases from primary breast cancer detected during the evaluation for urosepsis and hydronephrosis.

CASE PRESENTATION

We describe the case of a 58-year-old female patient who was diagnosed with de novo metastatic breast cancer in the urinary bladder. The patient did not have a positive family history of the disease. Apart from breast cancer, she had no other diseases. Laboratory analyses were within normal limits, except for the tumor marker Ca 15.3, which was elevated. She was presented with urinary symptoms and bilateral hydronephrosis.

Three years earlier, her initial diagnosis had been triple-negative breast cancer, staged as T4bN3M0. Histopathological examination revealed invasive lobular carcinoma.

The patient then underwent neoadjuvant chemotherapy (NCT), with anthracyclines and taxanes, and the radical radiation therapy of the breast and regional lymph nodes was performed. Afterwards, she had Madden modified radical mastectomy of the right breast.

The histopathological examination revealed that the stroma in the macroscopically described area was predominantly fibrously altered, with one section showing necrosis and another section exhibiting oedema accompanied by numerous histiocytes. Rare individual tumor cells and a microscopic focus of tumor cells (less than 1 mm) were also observed. The histopathological assessment of tumor response to therapy: almost complete response (pNCR). Receptors: ER sc.0, PR sc.0, HER-2:1+, Ki67: on the series of sections, the tumor cells are lost, so the proliferative factor cannot be determined.

Extensive lymphovascular invasion was observed along perinodal involvement, with 2 out of 10 removed lymph nodes testing positive for metastasis.

The treatment was continued with Capecitabine in an adjuvant approach (8 cycles).

Furthermore, on the regime of regular controls, the patient was followed up every six months, and the disease was asymptomatic for the next two years.

After that, she was hospitalized at the University Clinical Centre of Serbia (UCCS) Urology Clinic with a clinical picture of urosepsis, with bilateral coralliform calculus of the kidneys, and PCN was placed on the left. During the same hospitalization, a CT scan of the abdomen and pelvis was performed, which also verified retroperitoneal lymphadenopathy. Then she had a cystoscopy and placement of a JJ stent on the right, and a verified zone of bullous oedema on the back wall and around the right orifice.

Diagnostically processed, TUR of the urinary bladder was performed with the extraction of the right JJ stent, and CT findings of the abdomen and pelvis also showed retroperitoneal lymphadenopathy.

After the patient's discharge from the hospital, a control examination by the urologist was performed, along with an EHO examination of the abdomen. The examination revealed the right kidney with a calculus and track gradus 1, and the left kidney is thinner, oedematously enlarged with an incipient path.

The histopathological examination after TUR showed infiltratory carcinoma of the urinary bladder wall, and immunohistochemical staining was positive for GATA3, GCDFP-15, CDX2, and Mamaglobin **(Figure 1-5)**.

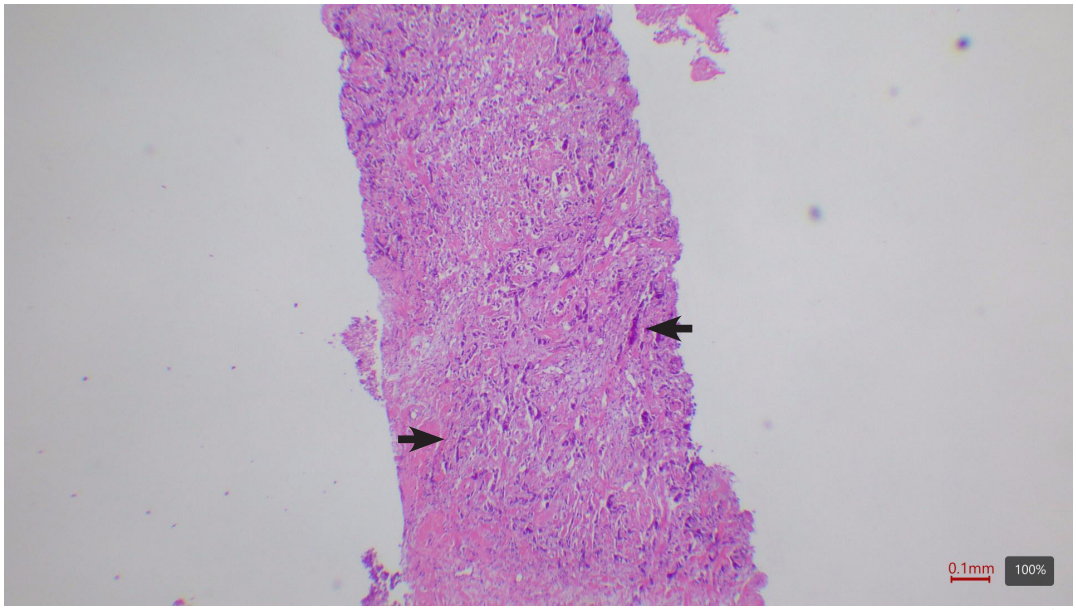

Figure 1. Breast carcinoma, H&E 4x. Core biopsy of a breast carcinoma. Infiltrative growth of tumor cells is observed (arrows).

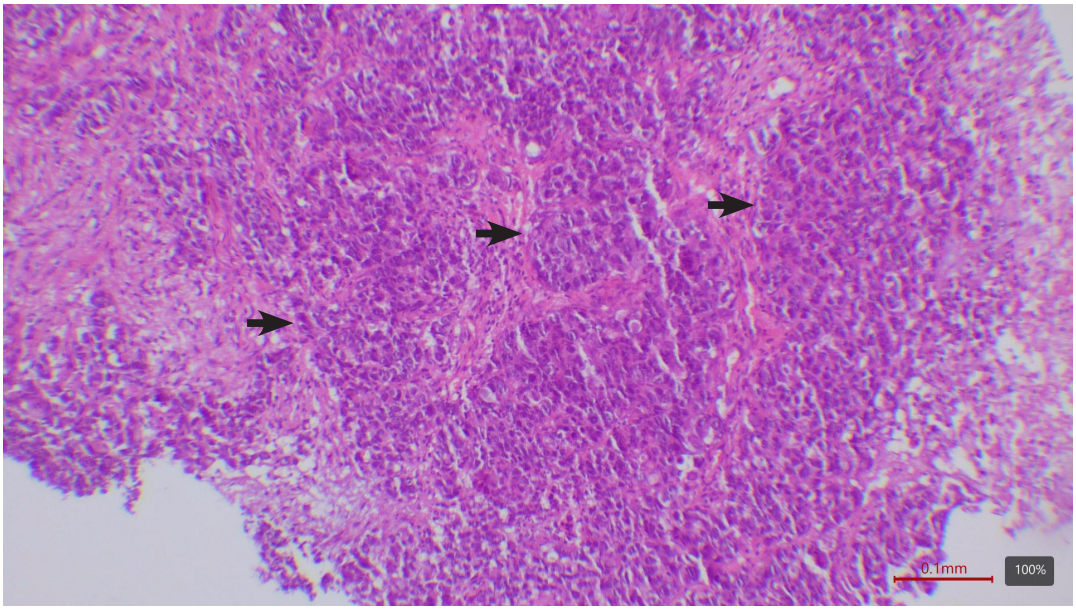

Figure 2. Breast carcinoma, H&E 10X. The tumor is composed of cells with eosinophilic, scant cytoplasm and pleomorphic hyperchromatic nuclei, arranged in sheets (arrows).

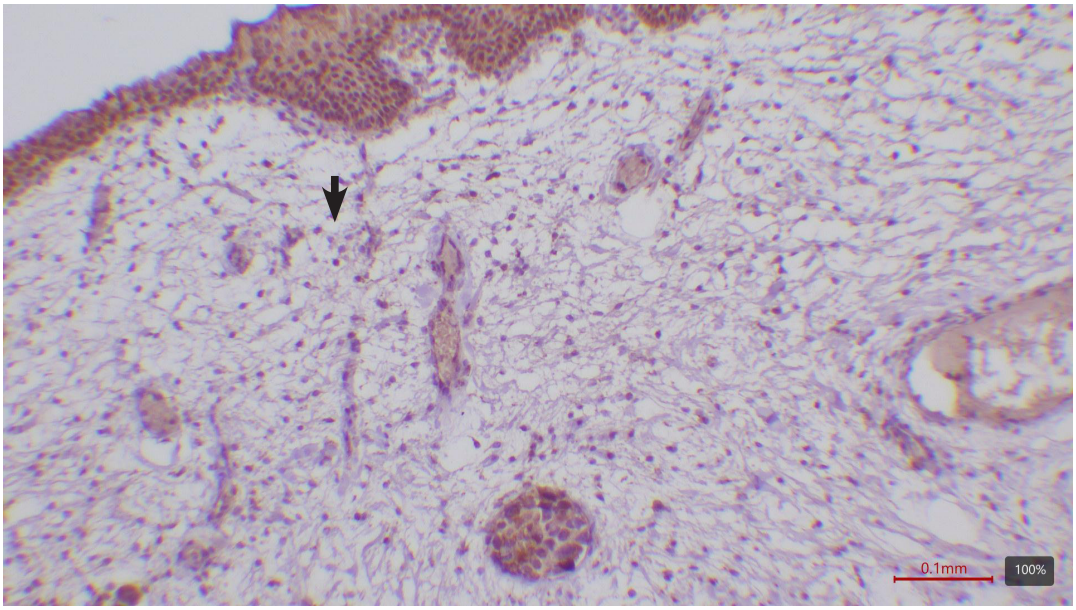

Figure 3. GATA3, 10x. GATA3 positivity in urothelial epithelium and negativity of tumor cells for GATA3 (arrow).

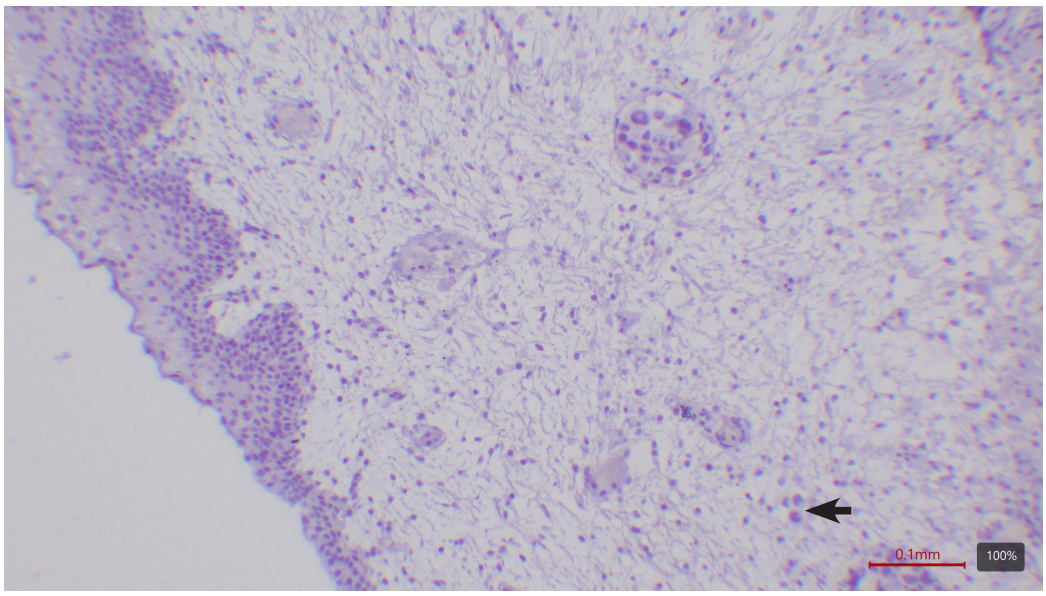

Figure 4. GCDFP-15, 10X. Tumor cells are negative for GCDFP-15 (arrow).

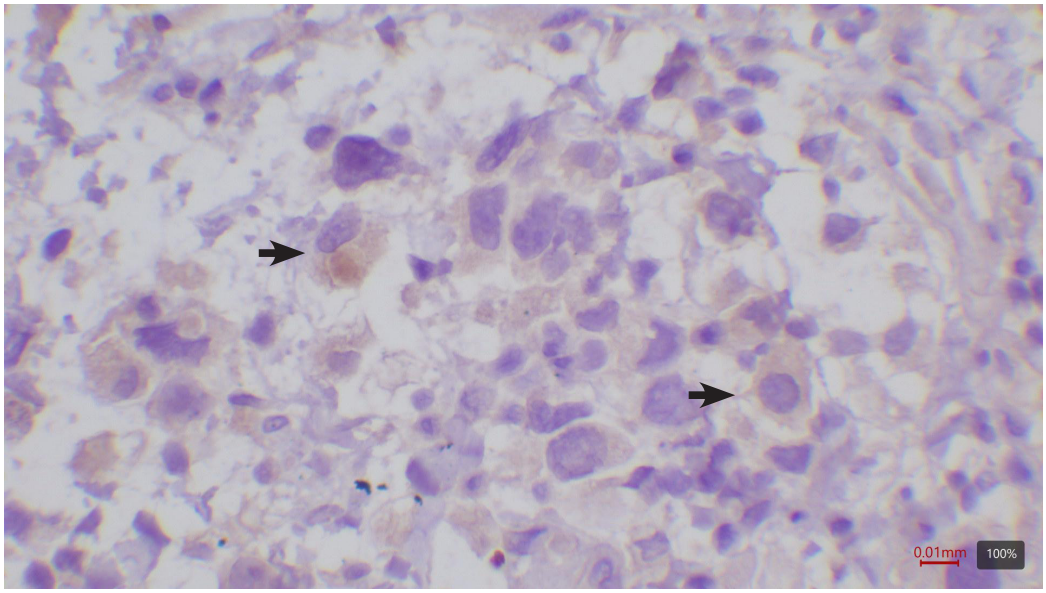

Figure 5. Mammaglobin, 40x. Focal weak positivity of individual tumor cells for mammaglobin. (arrows).

It was concluded that it was a metastasis of breast carcinoma in the urinary bladder wall.

DISCUSSION

The highest percentage of breast cancer death cases is caused by metastases. It is essential to detect a metastasis as early as possible to manage and predict breast cancer progression (7, 8). Although breast cancer screening, diagnosis, and treatment have improved mainly in recent years, a metastatic disease affects approximately 12% of breast cancer patients. Main features of metastatic breast cancer are a poor prognosis and a 26% survival rate on a five-year basis (9). The most common sites of metastases of breast cancer, in addition to lymphatic nodes in the axillary region, are bones (60-75%), lungs (32-37%), liver (32-35%), and brain (up to 10%) (10).

Secondary tumors of the urinary bladder are rare, and the majority of them are due to the direct extension of another pelvic neoplasm - colorectal, prostatic, cervical, or ovarian (11). Metastases of breast cancer in the bladder are rare, and isolated cases have been reported in the literature. Only 54 cases of breast cancer metastases to the bladder have been described in the literature, a large number of which were detected in autopsies. Most cases are diagnosed after the diagnosis of primary breast cancer and are usually associated with other metastatic sites (12). Lobular breast cancer is more likely to metastasize to the bladder than ductal carcinoma (13). The most significant number of patients (over 40%) present with hematuria. In addition to hematuria, frequent urination, urgency, dysuria, urinary incontinence, and nocturia are also common symptoms (14).

Diagnosis relies on a combination of imaging (starting with US, CT, MRI, and PET examinations), cystoscopy, histopathology, and immunohistochemistry.

In addition, during the monitoring of breast cancer itself, it is essential to monitor the tumor marker CA15-3. When the imaging method reveals a verified change in the bladder area, the definitive diagnosis is made by cystoscopic examination and biopsy; resection can be aided (11, 15).

The treatment is primarily systemic, and hormone-positive breast carcinomas respond better to therapy and have a longer time without progression of the disease. Radiotherapy can be used to control bladder bleeding (6). However, in case of obstructive uropathy, it is necessary to perform percutaneous drainage of the urinary system to preserve renal function before starting systemic therapy (16).

Generally, the prognosis of these patients is poor and similar to that of any MBC, and average survival is 18 to 30 months (16). The 5-year survival rate is only 2%, unless bladder metastases represent the only metastatic site (12).

CONCLUSION

This case highlights the diagnostic challenges associated with rare urinary bladder metastases from breast carcinoma.

Although prognosis remains poor, individualized systemic therapy and vigilant follow-up may improve quality of life and outcomes.

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Ethical approval: This study was conducted in accordance with Declaration of Helsinki and was approved by the Ethics Committee of Institute for Oncology and radiology of Serbia, Belgrade, approval number 2594/2025. The date of issuance of the permit was August 22, 2025.

Informed consent: Has been obtained.

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VEOMA RETKA LOKALIZACIJA METASTAZA KARCINOMA DOJKE U ZIDU MOKRAĆNE BEŠIKE

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Sažetak

Uvod: Kao najrasprostranjenije maligno oboljenje kod žena širom sveta, karcinom dojke ima izuzetno visoku incidencu i stopu mortaliteta i stoga predstavlja ozbiljan javno zdravstveni problem. Metastaze karcinoma dojke u zidu bešike predstavljaju izazov u dijagnozi jer je to retka i ponekad asimptomatska bolest.

Cilj ovog rada je da predstavi redak slučaj metastaze mokraćne bešike koja potiče iz invazivnog lobularnog karcinoma dojke i da naglasi značaj prepoznavanja atipičnih mesta metastaziranja.

Prikaz slučaja: Žena stara 58 godina sa trogodišnjom istorijom lobularnog karcinoma desne dojke pojavila se sa urinarnim simptomima i bilateralnom hidronefrozom. Inicijalni tumor je bio tripl-negativan, stadijum T4bN3M0. Nakon neoadjuvantne hemoterapije (antraciklini i taksani), radioterapije i modifikovane radikalne mastektomije, histopatološka procena odgovora tumora na terapiju pokazala je skoro potpuni odgovor (pNCR), a dva od deset limfnih čvorova bila su pozitivna na metastaze. Tretman je nastavljen sa Kapecitabinom u adjuvantnom pristupu (8 ciklusa), a pacijentkinja je bila bez simptoma dve godine. Nakon toga, razvila je urosepse i primljena je u bolnicu zbog bilateralne hidronefroze i bubrežnih kamenaca. Snimanje (CT) je otkrilo retroperitonealnu limfadenopatiju, a cistoskopija je pokazala bulozni edem zida bešike. Histopatološka analiza nakon TUR pokazala je infiltrativni karcinom zida mokraćne bešike, a imunohistohemijsko bojenje bilo je pozitivno za GATA3, GCDFP-15, CDX2, Mamaglobin i zaključeno je da se radi o metastazi karcinoma dojke u zidu mokraćne bešike.

Zaključak: Uprkos napretku u terapiji, prognoza ostaje loša. Prepoznavanje ovog neuobičajenog obrasca metastaziranja od ključnog je značaja za pravovremeno prepoznavanje, tačnu dijagnozu i multidisciplinarno zbrinjavanje.

Ključne reči: karcinom dojke, metastaze, histopatološki pregled, lečenje

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