

Solitary bladder metastases from breast cancer: Case report and literature review

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Abstract

Urinary bladder is an uncommon site of metastasis from breast cancer, especially when it's the only organ involved. We report the case of a 60-years old patient who developed isolated bladder metastasis three years after the primary diagnosis of a stage III lobular carcinoma of the breast. Abdominal pain and dysuria resulting from hydronephrosis as well as constipation related to the pelvic mass led to diagnosis of metastasis disease. The patient presented histological and radiological complete response after paclitaxel and carboplatin chemotherapy. We reviewed the literature and discussed the clinical presentation, physiopathology, management and prognosis of this entity.

Keywords

urinary bladder metastasis; lobular carcinoma; breast metastasis

Introduction

Breast carcinoma is the most common cancer diagnosis in women. Usual metastatic sites include lymph nodes, lung, liver, and bones. Rarely other sites, such as urinary bladder and retro peritoneum are involved. There are more than 40 cases of bladder metastases from breast cancer but most of them have multiple metastases. Only 12 cases of solitary bladder metastases from breast cancer are reported in the literature. We report the case of a patient who developed a solitary urinary bladder metastasis three years after primary diagnosis of stage III lobular carcinoma.

Case Report

A 60-year-old women was diagnosed with left-sided clinical stage III breast cancer. She underwent a conservative surgery of the superior-external quadrant with ipsilateral axillary lymph node dissection. Pathology revealed a 15 mm lobular carcinoma. The resection margins were free of tumor involvement. 26 out of 29 nodes were positive. Receptors were positive for estrogen (ER, 80%), negative for progesterone and HER2/neu status was negative. The patient was treated by 4 cycles of adjuvant chemotherapy with 5-fluorouracil, Epirubicin, Cyclophosphamide and 4 cycles of Docetaxel. This chemotherapy was preceded by a 64 Gray loco regional radiation therapy and hormonal therapy. Three years later, the patient presented with abdominal pain, dysuria and constipation. Ultrasound examination revealed right hydronephrosis. Pelvic MRI showed an irregular thickening of the right

urinary bladder wall with surrounding fat streaking to the right parametrium and sub-mucosal infiltration of the rectum wall. There was evidence of invasion of the right pelvic ureter with hydronephrosis (Fig1-2). Cystoscopy showed an irregular thickening on the right bladder wall with intact overlying mucosa, which was biopsied. On immunohistochemical staining, the tumor cells were positive for CK-7, ER (90%), while they were negative for CK- 20, E-cadherin and PR. The index of proliferation Ki 67 was estimated at 50% (Fig3). Survey FISH resulted negative for Her2/neu gene amplification (fig4). Thus suggesting bladder metastasis from lobular carcinoma of the breast. Computed tomography (CT) of the chest, abdomen and pelvis showed no lymph nodes or distant metastases. No loco regional relapse was detected either. Breast tumor marker was elevated (CA 15-3 = 251 IU/ml). Thereafter she received six cycles of chemotherapy including paclitaxel (150mg/m²) and carboplatin (5 AUC). Radiological and cystoscopy control with biopsies showed a complete clinical, radiological and histological response (fig5). Our patient is alive at the time of writing (24 months) with no evidence of disease recurrence.

Discussion

Breast cancer is the most common cancer in women. The metastatic spread of the primary tumor is the main cause of mortality [1,2,7]. This cancer usually spreads to lung, bone, liver, lymph nodes, brain and skin but rarely to the urinary bladder and retro peritoneum [3]. On the other hand, secondary tumors of the urinary bladder are rare, accounting for 2% of all bladder neoplasm [3]. The majority of them are due to direct extension of another pelvic neoplasm [4], but unusually of breast cancer.

The first examples of such neoplastic involvement were found through autopsy reports [5,6]. Goldstein reported 4 cases of metastatic carcinoma to the bladder from 341 autopsies of patients who died of breast carcinoma [13].

Twelve cases of solitary bladder metastasis have been reported (Table 1). The presented case is an example of solitary distant organ metastasis.

The histological type of breast carcinoma may influence its metastatic pattern [7]. A large series noted that 3.1% of lobular carcinoma metastasized to the peritoneum and retro peritoneum compared with 0.6% of ductal carcinoma [10]. One explanation is that lobular carcinoma is a serosa type, which makes it able to spread to the gastrointestinal and gynecological organs [11].

The three main receptors studied in breast cancer are Estrogen, progesterone, and Her2. Discrepancy between receptors is not uncommon between the primary and the secondary tumor. Iguchi and al. reported that the discordance rate was as high as 24% [14]. Bladder metastases from our case were positive for estrogen and negative for progesterone receptors, which was also the same for the patient's known primary cancer.

Immunohistology as well as the absence of bladder mucosa alteration can be helpful to differentiate histological variant of primary bladder tumor from metastasis [15]. Our patient did not present mucosal lesions and tumor cells were negative for CK- 20 and E-cadherin.

The most common presenting symptoms were hematuria and incontinence [11,17]. However, pelvic mass, dysuria, bilateral hydronephrosis with abdominal pain and renal failure are less common [16]. Our patient presented with all these symptoms. Cormio and al. reported the first case of an

Authors	GU symptoms	RH Breast/RH Bladder	Breast tumor subtype	Treatment for bladder Metastasis	Bladder metastasis to death
Silverstein [25]	Frequency, urgency, nocturia,	NR +/NR	NR	NR	2 years
Berger [24]	Microscopic Hematuria	ER-PR-/NR	IDC	NR	NR
Elias[9]	Urgency	ER+PR+ /ER-PR-	IDC	HT	>1years
Poulakis [8]	Frequency urgency Nocturia	ER+PR+ /ER+PR+	NR	NR	>5years
Choudhary[26]	Mixed Urinary Incontinence	NR ER+/NR	NR	NR	>8months
Soon [23]	Mixed Urinary Incontinence	NR	ILC	HT	NP
E.Vulcano [1]	Urinary frequency and nocturia	NR ER+ /NR PR-	ILC	CT+ HT	2 years
Xiao[17]	Difficult urination, Hydronephrosis	NR PR+ / NR PR+	ILC	HT	10 months
Gina Reichman [19]	Urge-incontinence	NR/ER+PR+	ILC	HT	10 months
Abou Ghaida [12]	Frequency, dysuria, incontinence, hydronephrosis	ER+PR+ /ER+PR-	IDC	CT	1 year
Carsten Nieder[27]	Anemia, renal failure, hydronephrosis	ER+PR- /ER+PR-	ILC	HT+RT	1 year
Luigi Cormio[18]	Asymptomatic hydronephrosis	ER+PR+ /ER+PR+	ILC	CT	Alive

Table 1: cases of solitary urinary bladder metastasis from breast cancer

Abbreviations: GU: genitourinary; NR: not reported; ILC : invasive lobular carcinoma; IDC: invasive ductal carcinoma; ER: estrogen receptors; PR: progesterone receptors; HT: hormonal therapy; CT: chemotherapy; RT: radiotherapy

asymptomatic bladder metastasis from breast cancer being diagnosed only on the basis of follow-up CT scan [18].

Management of such metastases includes various therapeutic options. Isolated metastases of primary breast carcinoma to the bladder are mostly treated by systemic chemotherapy [1,5] as in our case. The good response as showed in the pelvic MRI and the cystoscopy is another interesting feature.

To our knowledge, three cases of successful hormonal therapy have been reported. Reichman and al. suggested that conservative management with Tamoxifen resulted in clinical and partial radiological remission and the urge-incontinence disappeared [19]. Radiotherapy was considered because of its ability to stop hematuria and provide local disease control [20].

The prognosis of metastatic breast cancer to the urinary bladder is similar to that of any metastatic breast cancers of which average survival is from 18 to 30 months [21].

Such site of metastasis has been shown to have a worse prognosis than metastasis to bones [22]. One explanation is that symptomatic bladder involvement from breast cancer is detected at late stage. It's only when the mucosa is involved by the disease when alarming symptoms, such as gross hematuria leads to investigations [12].

Even if symptoms were not specific in our patient and in spite of the absence of mucosal invasion, proper investigation helped us to prevent the delay of detection and to start the treatment one month after the first symptom.

Conclusion

Incidence of metastasis to the bladder is not as great as other sites. Patients with history of breast cancer and urinary symptoms should be carefully evaluated for bladder metastasis.

Figures



Figure 1: Pelvic MRI showing an irregular thickening of the posterior-lateral wall of the bladder



Figure 2: Pelvic MRI showing an irregular thickening of the posterior-lateral wall of the bladder

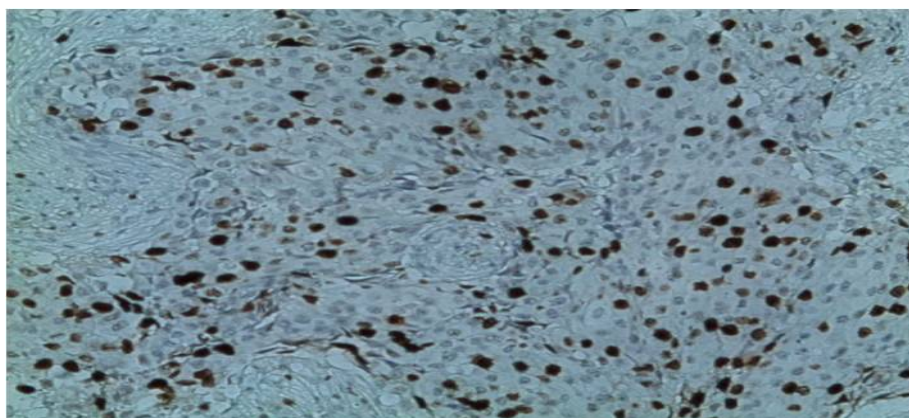


Figure 3: Index of proliferation Ki67 estimated at 50% (IHC $\times 250$)

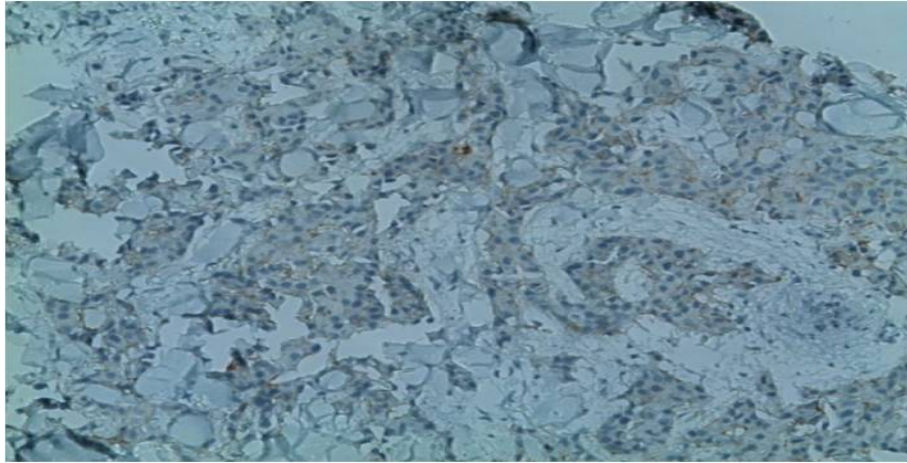


Figure 4: Survey FISH resulted negative for Her2/neu gene amplification score2 (IHC x 250)

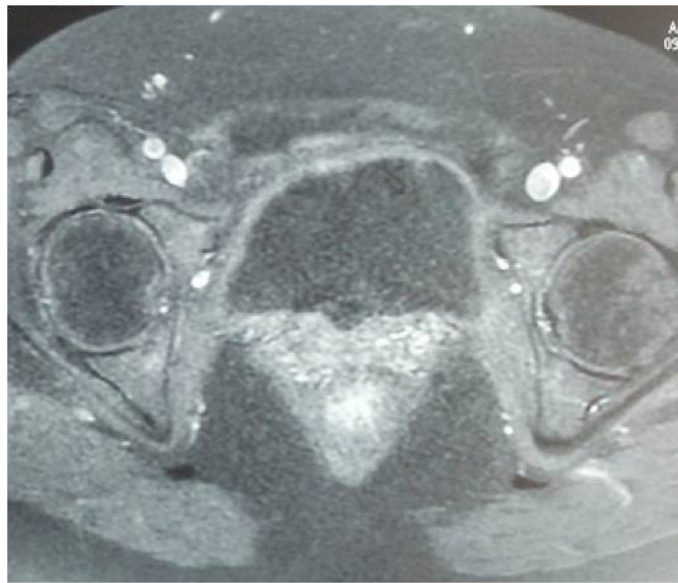


Figure 5: Pelvic MRI after chemotherapy showing complete radiological response

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