CASE REPORT

Metastatic breast cancer presenting as detrusor overactivity

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SUMMARY

Breast carcinoma metastatic to the bladder is rare and accounts for approximately 3% of all secondary bladder neoplasms. We examine a case of breast cancer metastatic to the bladder with normal findings at cystoscopy. A 53-year-old woman with a history of breast carcinoma presented with a 6-month history of severe urgency and urgency incontinence. Treatment with multiple antimuscarinic therapies was unsuccessful. Vaginal examination demonstrated a non-mobile uterus with a suggestion of parametrial thickening. Urodynamic studies confirmed detrusor overactivity. CT showed a thickened bladder wall and cystoscopy revealed normal bladder mucosa with reduced bladder capacity. Bladder biopsies identified a poorly differentiated adenocarcinoma with strong oestrogen receptor staining. This was reported as a secondary deposit from a primary breast malignancy. The patient is currently under the care of the breast team and undergoing palliative chemotherapy.

BACKGROUND

Breast carcinoma remains the second leading cause of death for cancer despite increased awareness, screening and advanced treatment. It accounts for 15% of female deaths from cancer. Common sites of tumour metastases include the lung, bone, liver, lymph nodes and skin.¹ The bladder remains an unusual metastatic site for breast cancer. In most cases, cystoscopy and bladder biopsies remain the gold-standard investigation for localising the lesion for histology.² In our case report, we examine a case of breast cancer metastatic to the bladder with normal findings at cystoscopy.

CASE PRESENTATION

A 53-year-old woman presented to the urogynaecology clinic with a 6-month history of frequency, nocturia, urgency and urgency incontinence. There was no history of haematuria and her weight was steady. She had no other relevant medical comorbidities. Antimuscarinic therapies (including solifenacin succinate, tolterodine tartrate and fesoterodine fumarate) were tried over a 3-month period with no improvement of symptoms.

The patient's history included a wide local excision and axillary node dissection to her right breast 6 years previously for a grade 2 lobular carcinoma. She had concurrent neoadjuvant chemotheradiotherapy and tamoxifen. Histopathological examination of the carcinoma demonstrated that it was positive for oestrogen as well as progesterone receptors. Four out of 21 lymph nodes, including the apical node, had been affected with no

evidence of metastatic spread. She was discharged from the breast team 2 years prior to presentation.

Abdominal examination was unremarkable. A healthy cervix was identified on speculum examination. On vaginal examination, suprapubic fullness was felt. The uterus was non-mobile with a suggestion of parametrial thickening.

In view of her history of malignancy and unusual examination findings, a CT of the chest, abdomen and pelvis was performed in addition to urodynamic studies.

INVESTIGATIONS

A CT of the chest, abdomen and pelvis showed a contracted urinary bladder with generalised thickening of its wall (figure 1). There was no hydronephrosis or hydroureter recorded. Both breasts were noted to be normal. Urodynamic studies showed detrusor overactivity with associated urinary leakage (figure 2). In view of the CT findings and lack of response to medical therapy the patient was listed for a cystoscopy. Cystoscopy revealed normal bladder mucosa, but the capacity was reduced at 450 mL. Random bladder biopsies were taken from the bladder mucosal wall. Histology identified an infiltrative, poorly differentiated adenocarcinoma with strong oestrogen receptor staining (figure 3). This was reported as a secondary deposit from a primary breast malignancy.

DIFFERENTIAL DIAGNOSIS

The patient's initial urinary symptoms were suggestive of detrusor overactivity and she was therefore treated with antimuscarinic drug therapy. However, in view of her history of malignancy, unusual examination findings and drug-resistant detrusor overactivity, there was a high index of

Figure 1 CT of the bladder demonstrating the generalised bladder wall thickening and a contracted bladder.

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Figure 2 Urodynamic trace demonstrating severe detrusor overactivity.

suspicion for a more sinister underlying pathology. Consequently, despite normal cystoscopic findings, bladder biopsies were taken, which confirmed bladder carcinoma.

TREATMENT

Currently, a combination of an antimuscarinic (propiverine hydrochloride) and a β_3 -adrenoreceptor agonist (mirabegron) is being used to control the patient's urinary symptoms. Combination therapy is not regarded as standard treatment for overactive bladder (OAB). However, in such refractory cases, the mode of action of both drugs on two different receptors may result in a synergistic effect on efficacy.^{3,4} In this case, the use of this combination of medications has significantly improved the quality of life of our patient.

OUTCOME AND FOLLOW-UP

Unfortunately, the diagnosis did not improve overall prognosis. However, it did allow the patient to be appropriately referred to

the breast and oncology team and receive palliative chemotherapy at a much earlier stage, thereby improving her quality of life.

DISCUSSION

Metastatic neoplasms of the bladder constitute up to 14% of all malignant bladder tumours.⁵ Breast carcinoma metastatic to the bladder is rare and accounts for approximately 3% of all secondary bladder neoplasms. Such metastatic bladder neoplasms were first discovered through autopsy reports.⁶ A review conducted in 2000 revealed 19 cases of patients with breast cancer who had bladder metastases diagnosed while they were alive. The commonest presenting urinary symptoms included macroscopic haematuria, frequency, nocturia, dysuria and incontinence.² Symptoms of purely OAB are rare. Patients usually present with evidence of extensive pelvic involvement and obvious lesions at cystoscopy. Urinary symptoms tend to correlate with tumour penetration into the mucosal lining and are a late sign of metastases.⁷ Mortality rates were high with death occurring usually within 24 months after the onset of urinary symptoms.²

Metastases to the bladder can occur through a variety of routes. These include direct extension from a primary tumour, via lymphogenous or haematogenous routes, and venous emboli implantation into the serosa.^{7,8} An alternative theory put forth by Pontes and Oldford⁹ postulated that breast cancer metastasises to the bladder via a retroperitoneal pathway.

In all cases reviewed by Feldman, the diagnosis was clinched as bladder lesions were noted on cystoscopy.² However, in our case cystoscopy findings were normal. If bladder biopsies had not been taken, the diagnosis would not have been made. Radiological imaging may help with the diagnosis. However, CT imaging in our patient only showed generalised thickening of the bladder wall. A study to evaluate the significance of incidental bladder wall thickening on CT demonstrated that out of 11 patients with diffuse bladder wall thickening only 1 had abnormal cystoscopic findings and no patients were found to have malignancy.¹⁰ Therefore, there is currently no cohesive pathway with regard to investigation of bladder wall thickening.

Figure 3 Histology of bladder urothelium with ER (oestrogen receptor) staining, which stains the nucleus of malignant cells.

The failure of the CT imaging and cystoscopic findings to identify malignant lesions in the bladder mucosa in this case would suggest that some cases of metastasis to the bladder might go undiagnosed. It may therefore be prudent to perform a flexible cystoscopy on all patients who have failed to improve symptomatically after two antimuscarinic therapies. To avoid missing significant pathology when cystoscopy is normal, bladder biopsies should probably be taken even in the absence of obvious intravesical pathology.

Learning points

- ▶ Metastatic breast carcinoma accounts for 3% of all bladder neoplasms.
- ▶ A complete abdominal and pelvic assessment should be performed in all patients who present with urinary incontinence.
- ▶ A differential diagnosis of bladder carcinoma should be considered in patients with drug-resistant overactive bladder symptoms.
- ▶ Cystoscopic investigations should be considered in patients with overactive bladder symptoms who have failed two antimuscarinic therapies.
- ▶ Bladder biopsies should be performed in the absence of obvious intravesical pathology.

Contributors AAB was involved in data collection and writing of manuscript. JD took part in editing of manuscript.

Competing interests None.

Patient consent Obtained.

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REFERENCES

- 1 Vulcano E, Montesano M, Battista C, *et al.* Urinary complications from breast cancer metastasis: a case report and review of the literature. *G Chir* 2010;31:243–5.
- 2 Feldman P, Madeb R, Naroditsky I, *et al.* Metastatic breast cancer to the bladder: a diagnostic challenge and review of the literature. *Urology* 2002;59:138.
- 3 Abrams P, Kelleher C, Staskin D, *et al.* Combination treatment with mirabegron and solifenacin in patients with overactive bladder: efficacy and safety results from a randomized, double-blind, dose-ranging, Phase 2 study (Symphony). *Eur Urol*. 2014;pii: S0302-2838(14)00131-6. doi:10.1016/j.eururo.2014.02.012
- 4 Balachandran A, Curtiss N, Basu M, *et al.* Third-line treatment for overactive bladder: should mirabegron be tried before intravesical botulinum toxin A therapy? *Int Urogynecol J* 2014. Published Online First. PMID: 25030325. doi:10.1007/s00192-014-2462-2
- 5 Herrera FA, Hassanein AH, Cosman BC, *et al.* Breast carcinoma metastatic to the gallbladder and urinary bladder. *Eur Rev Med Pharmacol Sci* 2010;14:883–6.
- 6 Ganem EJ, Batal JT. Secondary malignant tumours of the urinary bladder metastatic from primary foci in distant organs. *J Urol* 1956;75:965–72.
- 7 Ramsey J, Beckman EN, Winters JC. Breast cancer metastatic to the urinary bladder. *Ochsner J* 2008;8:208–12.
- 8 Soon PS, Lynch W, Schwartz P. Breast cancer presenting initially with urinary incontinence: a case of bladder metastasis from breast cancer. *Breast* 2004;13:69–71.
- 9 Pontes JE, Oldford JR. Metastatic breast carcinoma to the bladder. *J Urol* 1970;104:839–42.
- 10 McPartlin DS, Klauser MD, Nottingham CU, *et al.* Is Cystoscopy indicated for incidentally identified bladder wall thickening? *Can J Urol* 2013;20:6615–19.

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