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Oncology

Ureteral metastasis in carcinoma of the breast

Azza Gabsi[a,*], Yosra Yahiaoui[a], Alia Zenhani[b], Kaouther Herbegue[a], Khedija Meddeb[a], Amina Mokrani[a], Feryel Letaief[a], Mouna Ayadi[a], Henda Rais[a], Nesrine Chraiet[a], Slim Haouet[b], Amel Mezlini[a]

[a] Medical Oncology Department, Salah Azaiez Institute, Tunis, Tunisia
[b] Department of Pathology, Rabta Hospital, Faculty of Medicine, Tunis, Tunisia

Introduction

Breast cancer is now the most frequently diagnosed cancer and first cause of cancer death in women worldwide with the highest mortality rate due to its metastasis. The most commun sites of metastasis are bone, lungs, liver, and pleura.[1] Metastasis to the ureter is rare. Neoplasms of the stomach, breast, urinary bladder and prostate are the primary tumors that most frequently metastasize to the ureter and about 7.8% are metastases from carcinoma of the breast.[1]

Case report

We report the case of a 54-year-old menopausal female who presented a left ulcerated breast nodule.

The clinical examination showed a 2 cm ulcerated nodule at the superoexternal quadrant retracting the skin and a second retroareolar 1 cm nodule retracting the nipple. It was associated with an ipsilateral mobile axillary adenopathy of 2 cm.

Bilateral mammography coupled with ultrasound scan of the breast demonstrated a speculated mass of the outer higher quadrant of the left breast associated with micro calcifications and skin retraction, and an irregular left axillary adenopathy of 18mm.

A thoraco-abdominopelvic CT scan was performed. It showed a spiculated mass of the left breast of 25mm invading the pectoral muscle, a left suspicious axillary lymphadenopathy, non-specific lung micronodules and an obstructive tissue lesion of the left lumbar ureter enhanced after injection of contrast product extended on 19mm with dilatation of the excretory cavities upstream.

The case was discussed in a multidisciplinary consultation meeting, two synchronous tumors were suspected and the decision was to operate the breast then uereteronephrectomy would be performed.

A radical mastectomy and left axillary lymphadenectomy was carried out. An intra-operative pathology evaluation indicated breast invasive ductual carcinoma.

The final morphological assessment of the surgical specimen revealed 30 mm infiltrating ductal carcinoma, SBR III grade with vascular emboli. The tumor ulcerated the skin. The deep limit went to 1mm of the tumor. The mitotic index was estimated at 14 mitoses/10 large fields. The axillary dissection brought back 10 nodes of which 4 massively invaded, 2 in capsular rupture. The tumor was then staged pT4b pN2 M0 according to TNM classification 7th edition.

The immunohistochemical study showed moderate to intense staining of 80% of the cells at the estrogen receptors and intense labeling of 100% of the cells with progesterone receptors. The tumor did not express oncoprotein HER2 and the Ki67 was estimated at 50%.

Then, the patient underwent a nephroureterectomy with bladder cuff removal.

Macroscopically, it was an oblong ureteral tumor neoformation extending over 2 cm. On histological examination, this urethral neoformation corresponded to an undifferentiated carcinomatous proliferation infecting the adipose tissue and the muscularis. It was organized in clusters or spans. The tumor cells were rounded with eosinophilic cytoplasm. The nuclei were irregular vesicular and sometimes mitotic (Fig. 1). The ureteral section was non-tumorous. There was no regional lymph node metastasis.

Immunohistochemical analysis revealed positivity for both estrogen in all of tumor cells and progesterone receptors in 95% of them, confirming the diagnosis of a metastatic cancer from the breast cancer (Figs. 2 and 3). Tumor cells intensively expressed and diffuse CK7 and GATA3.

A body scan was performed postoperatively. It concluded an increase in the size and number of pulmonary nodules. The tumor marker CA15-3 was 84.2U/ml.

The patient received 3 cycles of chemotherapy by FEC (epirubicin,

* Corresponding author. Bab saadoun, 1099 Tunis, Tunisia. Tel.: +216 20 89 30 14.
E-mail address: azza_g86@yahoo.fr (A. Gabsi).

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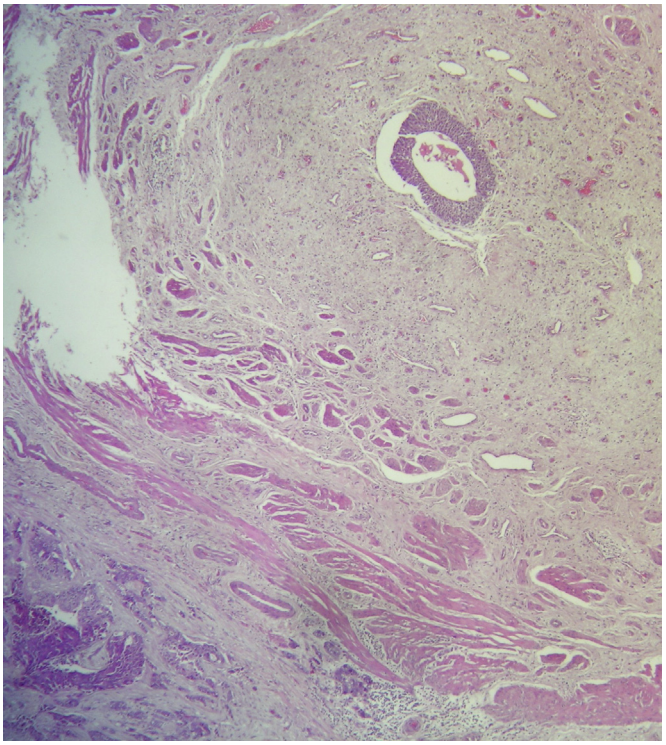

Fig. 1. HE x4: Ureteral wall infiltrated extrinsically by a proliferation of carcinomatous organized in spans and cords.

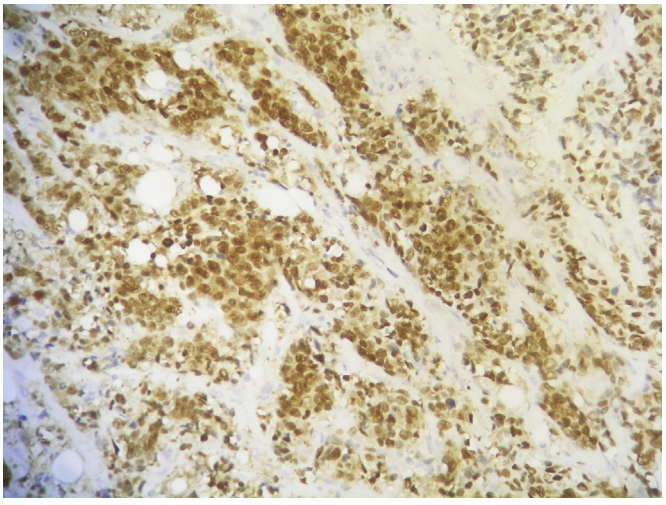

Fig. 2. Immunohistochemistry x 40: tumor cells express estrogen receptors intensively.

cyclophosphamid and 5 FU) with a progressive disease in the radiological evaluation.

Discussion

Metastatic tumors of the ureter are uncommon, and one of the rarest causes of ureteric obstruction.[1]Since their first mention in the literature by Stow in 1909,[1] only approximately 400 cases are on record in the literature.[1] Autopsy studies have also revealed only rare occurrences of ureteral metastases, and in a series of 10233 consecutive autopsies, the incidence of ureteral metastasis was only 0.37%.[4] As the ureters do not have a continuous longitudinal network of lymphatic and blood vessels, they are relatively resistant to metastasis by these two routes.[2]

Despite the fact that most of the ureteric metastases are asymptomatic and incidentally diagnosed at autopsy, urinary obstruction may also occur.[2] The breast and gastrointestinal systems comprise half of the cases, followed by prostate and uterine cancers comprising 30–40%, with gastric and lung cancers making up the remaining cases.[2]

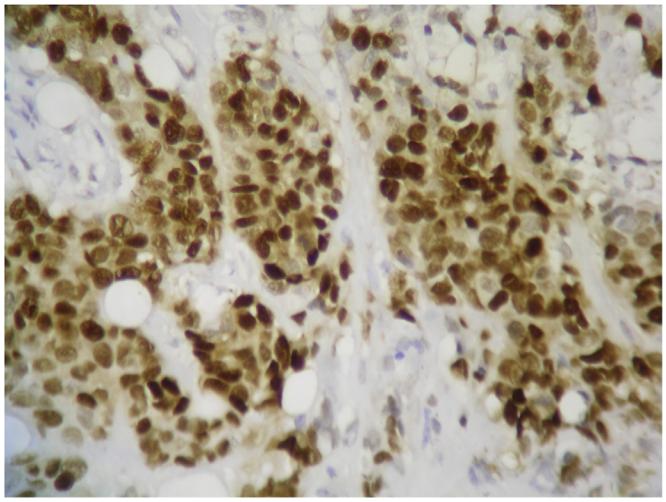

Fig. 3. Immunohistochemistry x 40: tumor cells express progesterone receptors intensively.

To our knowledge, to date, there are a total of 8 reports of patients with metastatic breast cancer to the ureter while living.[1,3–5] Only 3 of these patients were reported to have no other site of metastasis, other than axillary nodes at breast surgery.[1,3]

The majority of ureteral metastases that have been reported have been asymptomatic. The presence of certain clinical features in a patient with malignant breast tumor may suggest ureteral metastasis.[2]

However it can be identified incidentally during diagnostic imaging tests. In fact, the wide availability of radiographic testing has greatly increased the rate of incidental findings. Such findings raise physician awareness and alert them to perform a more aggressive workup. This may lead to a possible increase in the number of living cases with a diagnosis of ureteral metastases.

Ultrasonography is helpful in distinguishing between uereteral metastasis and calculus. CT scan may be useful in diagnosis and staging. Urinary cytology testing has a high specificity (over 90%) but low sensitivity (below 50%).[2] Ureteroscopy and nephroscopy allows confirming the diagnosis.[2]

Ureteral catheterisation is recommended in isolated stricture due to metastasis.[3] Nephrostomy and ureterostomy is indicated if the catheterisation is not possible. Nephrectomy is rarely required.[3] Radiation therapy has been recommended for management, but urinary diversion provides much more relief.[3] By the time there is metastasis to the ureter, most patients will have metastatic lesions elsewhere and systemic therapy is generally required. Systemic therapy is identical to that for metastatic breast cancer. In patients in whom estrogen receptors are present, or in those who have had a previous response to hormonal therapy, hormonal therapy is the treatment of choice.[3]

Conclusion

Although ureteral metastases from breast cancer are uncommon, the reports in the litterature shows an increase of such spread over the years. The presence of ureteral metastases indicates advanced disease and the prognosis is bleak.

Conflicts of interest

None.

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