

Giant Renal Metastasis as a Late Recurrence of Hormone Receptor-Positive Breast Cancer with Synchronous Brain Metastases: A Case Report

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ABSTRACT

Renal metastases from breast cancer are uncommon and may mimic a primary renal malignancy. We report the case of a 60-year-old woman with a history of hormone receptor-positive, HER2-negative breast cancer treated with mastectomy, adjuvant chemotherapy, radiotherapy, and 5 years of endocrine therapy. Seven years after the initial diagnosis and approximately two years after completion of endocrine therapy, she developed progressive left lumbar pain and focal seizures involving the right upper limb. Imaging revealed a giant left renal mass measuring 18.2 cm and three brain lesions. Because the renal lesion was initially suggestive of a primary renal tumour, a percutaneous biopsy was performed. Histology showed an undifferentiated carcinoma with strong diffuse oestrogen receptor expression, progesterone receptor negativity, and HER2 score 0, supporting metastatic breast carcinoma. The three brain metastases were treated with stereotactic radiotherapy at a dose of 35 Gy in five fractions. The renal lesion was considered unresectable because of its size and vascular involvement. Systemic treatment with fulvestrant and ribociclib was initiated, with stable disease at the first assessment. This case highlights the importance of tissue diagnosis when an unusual renal mass develops in a patient with a history of breast cancer, even after a prolonged disease-free interval.

Keywords: Breast cancer; Renal metastasis; Brain metastases; Late recurrence; Hormone receptor-positive; Ribociclib; Stereotactic radiotherapy.

INTRODUCTION

Breast cancer can metastasize to virtually any organ. Renal metastases are uncommon and are usually identified in the setting of disseminated disease. In some patients, however, a renal metastasis may present as a solitary or dominant renal mass and mimic a primary renal malignancy [1].

Hormone receptor-positive breast cancer is characterized by a persistent risk of recurrence that may continue for many years after completion of endocrine therapy, particularly in patients with larger primary tumours [2].

We report an unusual case of a giant renal metastasis occurring several years after completion of treatment for hormone receptor-positive breast cancer, associated with synchronous brain metastases.

CASE PRESENTATION

A 60-year-old woman was diagnosed in 2016 with invasive ductal carcinoma of the right breast. She underwent modified radical mastectomy with axillary lymph-node dissection. Pathological examination showed a pT2N0M0, grade 2 carcinoma with a luminal B phenotype. The tumour was strongly oestrogen receptor-positive, progesterone receptor-negative, and HER2-negative, with a Ki-67 proliferation index of 60%.

Adjuvant treatment consisted of three cycles of doxorubicin and cyclophosphamide followed by three cycles of docetaxel. Adjuvant three-dimensional conformal radiotherapy was delivered to the chest wall and regional lymphatic areas at a dose of 42 Gy in 15 fractions. Endocrine therapy was subsequently continued for five years and was completed in March 2022. The patient remained clinically free of disease during follow-up.

Approximately two years after completion of endocrine therapy, and around seven years after the initial diagnosis, she developed progressive left lumbar pain that became resistant to simple analgesics. In August 2024, she experienced focal motor seizures involving the right upper limb without loss of consciousness. Sodium valproate was initiated, with good control of the seizures.

Contrast-enhanced CT scan of the chest, abdomen, and pelvis revealed a large heterogeneous left renal tumour measuring approximately 162 × 100 × 182 mm, with central necrosis and

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heterogeneous contrast enhancement. The tumour involved the excretory tract and the left renal artery and was associated with ipsilateral hilar lymphadenopathy (Figure 1). PET/CT was not affordable [Figure 1].

Brain imaging [Figure 2] demonstrated three intra-axial lesions, including a left parietal lesion measuring $28 \times 26 \times 24$ mm, a left cerebellar lesion measuring $20 \times 15 \times 16$ mm, and a third lesion measuring approximately 6 mm. These findings were highly suggestive of metastatic disease. The renal tumour, however, raised the possibility of a primary renal malignancy.

A CT-guided biopsy of the renal tumour was therefore performed. Histology revealed an undifferentiated malignant epithelial neoplasm. Immunohistochemistry showed strong diffuse

oestrogen receptor expression in 100% of tumour cells, absence of progesterone receptor expression, and a HER2 score of 0. In the clinical context and given the patient's previous breast carcinoma, these findings were considered consistent with metastatic breast carcinoma.

Following discussion by the multidisciplinary breast cancer team, the patient underwent stereotactic radiotherapy for her symptomatic brain metastases, delivering 35 Gy in five fractions [Figure 3]. The renal tumour was considered unresectable because of its large size and vascular involvement. Systemic treatment with fulvestrant and ribociclib was subsequently initiated. At the first radiological assessment, the renal lesion remained stable, with no clinical neurological deterioration.

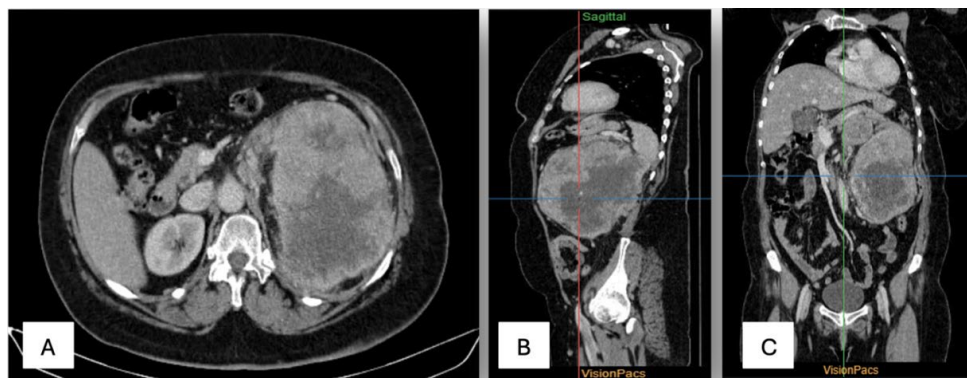


Figure 1: Contrast-enhanced CT scan of the chest, abdomen, and pelvis showing the massive left renal tumour (arrow), limited by the paranephric fascia, invading the excretory tract and the left renal artery, with associated ipsilateral renal hilar lymphadenopathy in axial (A), sagittal (B), and coronal (C) views.

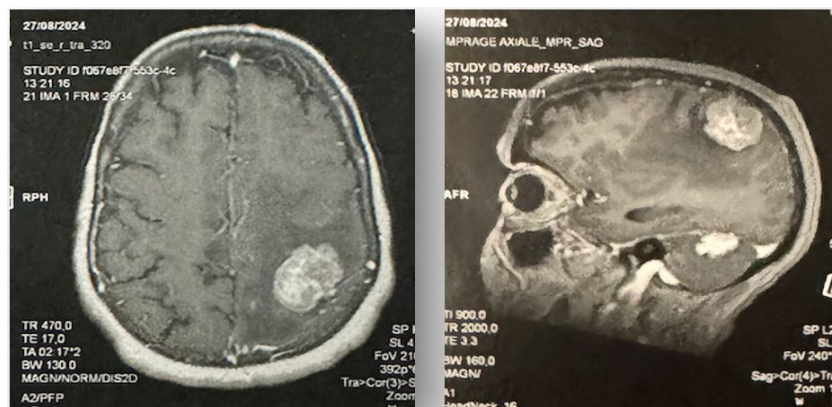


Figure 2: Brain MRI demonstrating three brain metastases: left parietal, left cerebellar, and capsulolenticular lesions, with perilesional oedema. The lesions measured $28 \times 26 \times 24$ mm, $20 \times 15 \times 16$ mm, and $6 \times 5 \times 4$ mm, respectively.

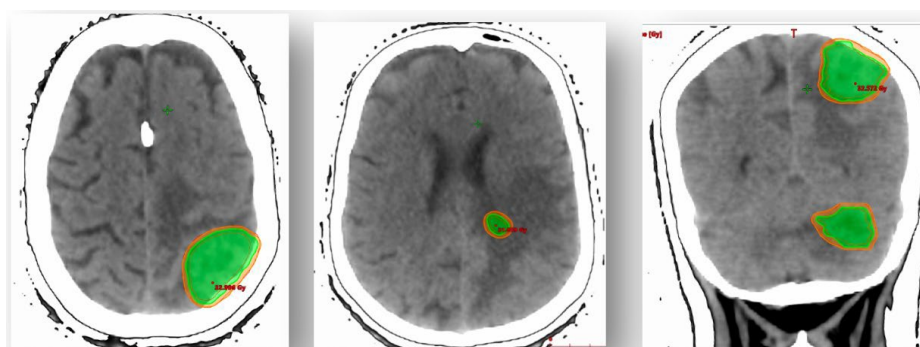


Figure 3: Dosimetric images of stereotactic radiotherapy for the three brain metastases, showing the 80% prescription isodose envelope corresponding to 35 Gy.

DISCUSSION

Renal involvement by metastatic breast cancer is rare. In an autopsy series of patients who died from malignant disease, renal metastases were identified in 7.2% of cases; most lesions were small, multiple, and bilateral, and breast cancer was among the more frequent primary tumours associated with renal metastases [1].

Clinically apparent renal metastasis from breast cancer is much less common. Published case reports have described renal lesions occurring many years after treatment for breast cancer and mimicking primary renal tumours. Takehara et al. reported a renal metastasis from breast cancer 16 years after mastectomy, whereas Ahmed et al. described a renal metastasis that initially resembled a primary renal tumour and was diagnosed by percutaneous biopsy [3,4].

Our case is unusual because of the exceptional size of the renal tumour, measuring more than 18 cm, and because it occurred together with three brain metastases after a prolonged disease-free interval. Obtaining tissue was therefore essential before considering major renal surgery. The immunohistochemical profile, particularly the strong diffuse oestrogen receptor expression in the context of a previous ER-positive breast carcinoma, supported the diagnosis of metastatic breast cancer.

The case also illustrates the persistent risk of late recurrence in hormone receptor-positive breast cancer. The EBCTCG meta-analysis demonstrated that the risk of distant recurrence continues for at least 20 years after the initial diagnosis, with risk strongly influenced by the original tumour size and nodal status [2].

At metastatic relapse, treatment should be guided by tumour biology, previous endocrine exposure, disease burden, symptoms, and the presence of visceral or central nervous system involvement. Current international consensus and ESMO recommendations support endocrine-based treatment combined with targeted therapy for many patients with hormone receptor-positive/HER2-negative advanced breast cancer [5,6].

In our patient, fulvestrant combined with ribociclib was selected as systemic treatment. The combination has demonstrated a clinically meaningful survival benefit in hormone receptor-positive/HER2-negative advanced breast cancer. In the MONALEESA-3 trial, ribociclib plus fulvestrant significantly improved overall survival compared with fulvestrant alone [7].

The presence of three brain metastases required local treatment in addition to systemic therapy. Current multidisciplinary guidelines support stereotactic radiosurgery or stereotactic radiotherapy in appropriately selected patients with a limited number of brain metastases and suitable clinical status [8,9].

The choice of stereotactic radiotherapy in our patient was consistent with this approach. Randomized evidence also supports avoiding routine whole-brain radiotherapy in appropriately selected patients with a small number of brain metastases because of its negative impact on cognitive function [10].

The management of the giant renal lesion was more challenging. Surgical resection was not considered feasible because of its extensive size and vascular involvement. In this setting, systemic therapy was prioritized. Although the first assessment demonstrated stable disease, longer follow-up is required before drawing conclusions regarding the durability of treatment response.

CONCLUSIONS

Renal metastasis from breast cancer is rare but should be considered in the differential diagnosis of a new renal tumour in patients with a history of breast cancer, even after a long disease-free interval. In our patient, biopsy was decisive in distinguishing metastatic breast cancer from a primary renal tumour and prevented potentially unnecessary surgery. The coexistence of a giant renal metastasis and brain metastases illustrates the heterogeneous pattern of late recurrence in hormone receptor-positive breast cancer. Multidisciplinary management combining stereotactic radiotherapy for brain metastases and systemic endocrine-targeted therapy was associated with initial disease control.

REFERENCES

1. Bracken RB, Chica G, Johnson DE, Luna M. Secondary renal neoplasms: an autopsy study. *South Med J.* 1979;72:806-807.
2. Pan H, Gray R, Braybrooke J, Davies C, Taylor C, et al. 20-Year Risks of Breast-Cancer Recurrence after Stopping Endocrine Therapy at 5 Years. *N Engl J Med.* 2017;377:1836-1846.
3. Takehara K, Koga S, Nishikido M, Kanetake H, Hayashi T, et al. Breast cancer metastatic to the kidney. *Anticancer Res.* 1999;19:5571-5573.
4. Ahmed Y, Aynaou M, El Houmaidi A, Mhanna T, Tombet C, et al. Breast cancer metastatic to the kidney: case report. *Urol Case Rep.* 2020;33:101302.
5. Cardoso F, Paluch-Shimon S, Schumacher-Wulf E, Matos L, Gelmon K, et al. 6th and 7th International consensus guidelines for the management of advanced breast cancer (ABC guidelines 6 and 7). *Breast.* 2024;76:103756.
6. Gennari A, André F, Barrios CH, Cortés J, de Azambuja E, et al. ESMO Clinical Practice Guideline for the diagnosis, staging and treatment of patients with metastatic breast cancer. *Ann Oncol.* 2021;32:1475-1495.
7. Slamon DJ, Neven P, Chia S, Fasching PA, De Laurentiis M, et al. Overall survival with ribociclib plus fulvestrant in advanced breast cancer. *N Engl J Med.* 2020;382:514-524.
8. Vogelbaum MA, Brown PD, Messersmith H, Brastianos PK, Burri S, et al. Treatment for brain metastases: ASCO-SNO-ASTRO guideline. *J Clin Oncol.* 2022;40:492-516.
9. Le Rhun E, Guckenberger M, Smits M, Dummer R, Bachelot T, et al. EANO-ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up of patients with brain metastasis from solid tumours. *Ann Oncol.* 2021;32:1332-1347.
10. Brown PD, Jaeckle K, Ballman KV, Farace E, Cerhan JH, et al. Effect of radiosurgery alone vs radiosurgery with whole brain radiation therapy on cognitive function in patients with 1 to 3 brain metastases: a randomized clinical trial. *JAMA.* 2016;316:401-409.