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Multiple brain carcinoma metastases treated surgically, long term survival

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ABSTRACT

We present the case of a 47-year-old woman diagnosed with breast cancer who underwent surgery and, 35 months later, was diagnosed with multiple brain metastases. She was treated surgically, followed by Whole Brain Radiation Therapy and chemotherapy. Clinical and imaging follow-up revealed no tumour recurrence after more than 5 years.

Keywords
carcinoma,
metastasis,
chemotherapy

INTRODUCTION

According to Hall et al., the 5-year survival rate was 1.3% for breast carcinoma, though it was not specified whether this referred to single or multiple metastases. Overall, multiple bilateral metastases are a poor prognostic indicator (P = 0.001). Brain metastases from breast cancer have the best chance of long-term survival if treated with surgical resection and Whole Brain Radiation Therapy [1].

Other authors have reported survival beyond 3 years in 2–3.3% of patients [2, 3]. Up to 30% of breast cancer patients develop brain metastases. The prognosis for patients with brain metastases is poor, and long-term survival is rare [4]. Altundag et al., in a study of 420 patients, showed that 82 patients (19.5%) were alive at least 18 months after diagnosis of brain metastases.

Up to 30% of patients with breast cancer develop brain metastases. Furthermore, 4.2% were alive at least 60 months after this diagnosis. Forty-six percent ofthese patients had a single brain metastasis [5].

CASE DESCRIPTION

The patient, a 47-year-old woman, was diagnosed with left breast carcinoma and underwent neoadjuvant chemotherapy with dual anti-HER2 blockade. She subsequently had a left radical mastectomy, which resulted in a complete pathological response. She received hormone therapy with Tamoxifen and an LHRH analogue, as well as adjuvant radiotherapy, and completed 1 year of adjuvant trastuzumab. Three years after her breast cancer diagnosis, she was found to have multiple brain metastases: two in the right temporal lobe, one in the left

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temporal lobe, and one in the left cerebellum (Figure 1), associated with significant edema (Figure 2).

She underwent a right temporal craniotomy for removal of the two temporal metastases, and a left suboccipital craniotomy for removal of the cerebellar metastasis (Figure 3).

Histopathological analysis confirmed metastasis from invasive lobular breast carcinoma, with HER2 overexpression and absence of hormone receptor expression.

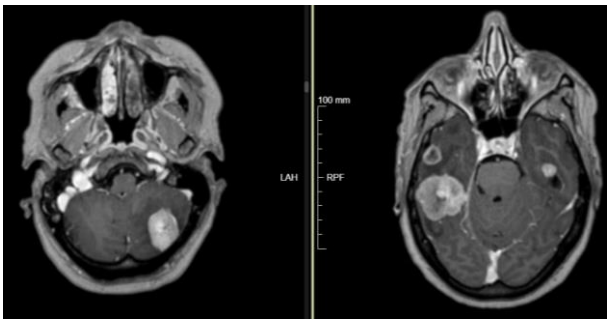

Figure 1. Multiple brain supra e infra-tentorial methastsis.

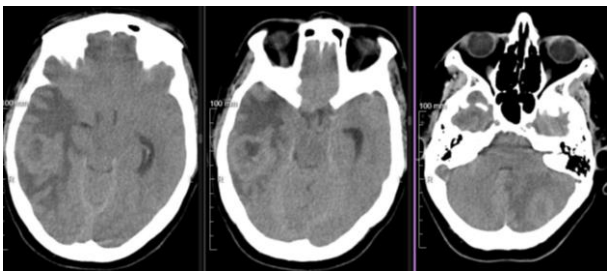

Figure 2. CT scan showing perilesional edema.

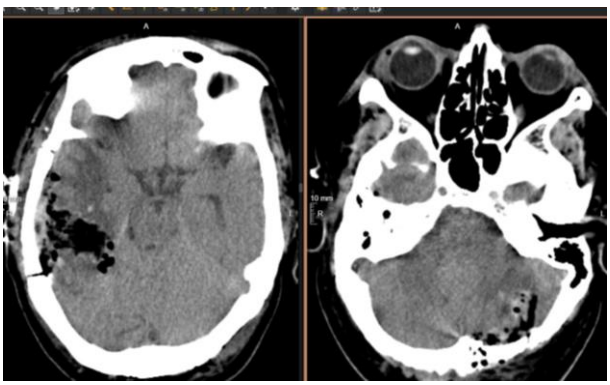

Figure 3. Postoperative CT scan.

Whole-brain radiotherapy was administered at a dose of 30 Gy, followed by chemotherapy with Paclitaxel, Pertuzumab, and Trastuzumab. Maintenance treatment with Pertuzumab and Trastuzumab was continued, with favorable imagological response.

She experienced both short- and long-term toxicities from oncological treatments, including dizziness, fatigue, and memory disturbances, leading to some degree of functional impairment.

Her medical history also includes bilateral pulmonary thromboembolism with left-sided pulmonary infarction in the same year as her brain surgery, as well as osteoporosis.

The patient is currently in good condition, independent in daily activities, and maintains an optimistic and positive outlook.

Brain MRI performed more than 5 years after surgery shows no signs of recurrence (Figure 4) and whole-body scintigraphy showed no abnormal radiopharmaceutical uptake suggestive of secondary bone involvement. No lytic lesions were detected (Figure 5).

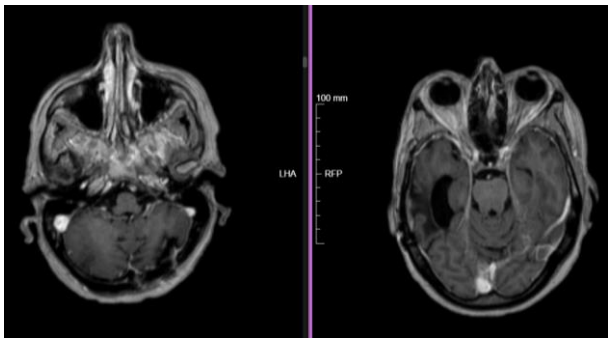

Figure 4. 5 years after surgical removal, no signs of tumor recurrence.

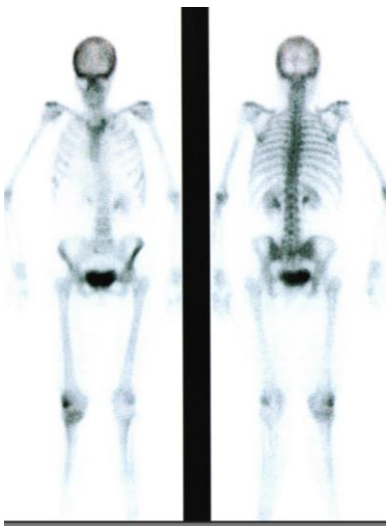

Figure 5. Whole body scintigraphy without pathological coaptation.

Conclusion

Managing multiple brain metastases is a complex challenge due to the underlying pathology and the unclear role and indications for surgical intervention, which is rarely considered in such cases.

Unfortunately, the incidence of multiple brain metastases is increasing because of higher cancer incidence, better and earlier diagnosis of the cancer, improved cancer tools treatment and longer survival. Each case should be analyzed individually and should be offered all the possible treatment options and not forget that surgical treatment is still a valid opportunity for these patients. Our case is relevant because the surgery permitted to remove three of four metastases that determined the course of the disease, removing the lesions causing edema, potentially lethal. The factor that contributed top long-term survival are young age, HER2 positive cancer, surgical treatment, therapy with hormonal blockage, Whole Brain Radiation Therapy.

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