

Case Report

Cerebellopontine angle tumour in a case of metastatic carcinoma breast: a diagnostic dilemma

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ABSTRACT

Tumours of the cerebellopontine angle are mostly vestibular schwannomas with metastasis being a rare diagnosis. But, metastasis if present, are usually from a breast or a lung primary. We presented a case of a 67 year old postmenopausal lady with luminal A carcinoma left breast who developed a recurrence on aromatase inhibitor with bone metastasis. She also presented with a cerebellopontine angle tumour which, because of its unusual presentation, presence of a recurrent breast disease with metastasis and mutation testing, raised the suspicion of a brain metastasis but was finally confirmed to be a vestibular schwannoma by histopathology.

Keywords: Cerebellopontine angle tumour, Breast cancer, Multiple primary, Recurrence, p53

INTRODUCTION

Multiple primary malignancies are defined as two or more primary malignancies in the same patient, when relapse or metastasis of a previous cancer have been excluded.¹ Brain metastasis in patients of carcinoma breast are found in around 30% of autopsy series but only 10-16% of patients are symptomatic.²⁻⁵ Risk factors predisposing to brain metastasis include young age, hormone receptor negative disease and Her-2/neu positive expression.⁶ Metastasis to the brain, in general, are mostly found in the supratentorial region as compared to the infratentorial region. Also, metastasis to the brain are usually multiple as compared to solitary or leptomeningeal.⁷ Metastasis to the brain in cases of breast cancer usually present within 2-3 years from the initial diagnosis of the primary and are usually associated with other systemic metastasis.⁸ Tumours of the cerebellopontine angle are mostly vestibular schwannomas with metastasis being a rare diagnosis.⁹ But, metastasis if present, are usually from a breast or a lung primary.¹⁰ We presented a case of a metastatic luminal A carcinoma breast with a cerebellopontine angle

tumour which, because of its unusual presentation, presence of a recurrent breast disease with metastasis and mutation testing, raised the suspicion of a brain metastasis but was finally confirmed to be a vestibular schwannoma by histopathology.

CASE REPORT

We presented the case of a 67 year old postmenopausal lady, known case of hypertension and diabetes, who presented with complaints of mass in left breast for last 2 years. On examination, a 5×4 cm lump was palpated in the right breast at 11 O'clock position with peau d'orange of breast skin. 1×1 cm mobile central group of lymph node was palpable. Mammography was done which showed a large dense mass (5.1×4.4×3.2 cm) involving subareolar region, irregular in shape with spiculations, involving skin and nipple. CECT chest and abdomen showed no evidence of any metastatic lesions. The final stage of the tumour was staging-PT4b N0 M0. Core needle biopsy was suggestive of invasive ductal carcinoma no special type with IHC suggestive of ER+, PR+, HER2 neu negative tumour, KI 67 index >35%,

positive for E Cadherin and positive for p53 immunohistochemistry. Neoadjuvant chemotherapy was given and after downstaging of the tumour, patient was taken up for modified radical mastectomy. Postoperatively adjuvant chemotherapy was given and patient was started on letrozole. After 12 months of the surgery, the patient complained of progressively increasing severity of lower back pain. Bone scan was done and it was suggestive of increased tracer uptake in few dorsal and lumbar vertebrae. CDK4/6 inhibitor (Palbociclib) was started in view of bone metastasis. After another 2 months, patient complained of increasing severity of headache and tinnitus in right ear. Brain metastasis was suspected and an MRI brain was done. The MRI was suggestive of well-defined lesion measuring 15×14 mm with altered signal intensity; hypointense on T1 and heterogeneously hyperintense on T2 and FLAIR sequence, homogenous enhancement on gadolinium sequence in right cerebellopontine angle extending into internal auditory canal giving an ice cream cone appearance-vestibular schwannoma. Tumor exposure and resection was performed by a retrosigmoid transmeatal approach (MT). The histopathology was suggestive of vestibular schwannoma with Antoni A and Antoni B components. The patient recovered uneventfully and is still under follow up.

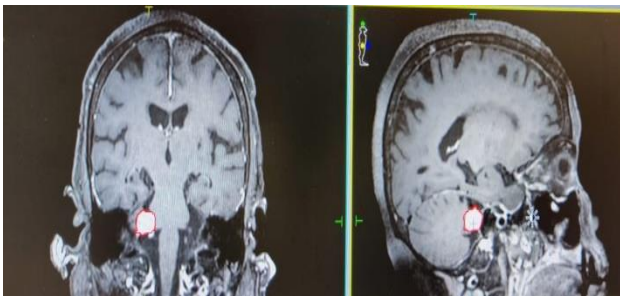


Figure 1: MRI brain suggestive of a tumour at the cerebellopontine angle.

DISCUSSION

The p53 gene synthesis a nuclear phosphoprotein which acted as a tumour suppressor by controlling the cell cycle. Wild type p53 underwent degradation by MDM2. But, in case of a missense mutations of the p53 gene, the protein got stabilized and got accumulated in the cell.¹¹ p53 mutations were found in 18-25% of breast carcinomas.¹² These mutations were mostly found in basal type and Her2 enriched breast carcinomas than in luminal type of breast cancers.¹³ But, if found in luminal A breast cancers, these mutations caused increased risk of both early and late recurrences with ongoing aromatase inhibitor treatment.¹⁴ On the other hand, in patients of sporadic vestibular schwannomas, most of the patients had one somatic mutation affecting the NF2 gene. The second hit of the NF2 gene caused dysfunction of p53 protein.¹⁵ Thus, a mutation of p53 was associated with both an increased risk of development of vestibular

schwannoma and tendency of recurrence of the breast cancer with metastasis.

CONCLUSION

Metastasis to the CP angle are extremely rare. But the most common primary of CPA metastasis is breast adenocarcinoma. In our patient, the less commonly known presence of a p53 positivity in immunohistochemistry, despite being a luminal A breast cancer and the early recurrence of the disease within 12 months with metastasis to bone raised the suspicion of brain metastasis. Also, vestibular schwannomas are usually slow growing with hearing loss and tinnitus being the most common symptoms. But our patient presented with an increasing severity of headache, making a conservative approach out of question. Therefore, to conclude, although metastasis is a rare event in cerebellopontine angle, their diagnosis should not be delayed and intervention must be done at the earliest. Clinical features and histological confirmation should be relied on instead of radiological features. Suspicion may be raised if in a known case of carcinoma lung, breast or prostate present with new onset hearing loss, tinnitus, headache or facial nerve palsy. Conservative management should not be sought if there is a high suspicion of metastasis.

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REFERENCES

1. Testori A, Cioffi U, Simone MD, Bini F, Vaghi A, Lemos AA, et al. Multiple primary synchronous malignant tumors. BMC Res Notes. 2015;8:730.
2. Barnholtz-Sloan JS, Sloan AE, Davis FG, Vigneau FD, Lai P, Sawaya RE. Incidence proportions of brain metastases in patients diagnosed (1973 to 2001) in the Metropolitan Detroit Cancer Surveillance System. J Clin Oncol. 2004;22(14):2865-72.
3. Lin NU, Bellon JR, Winer EP. CNS metastases in breast cancer. J Clin Oncol. 2004;22(17):3608-17.
4. Lee YT. Breast carcinoma: pattern of metastasis at autopsy. J Surg Oncol. 1983;23(3):175-80.
5. Tsukada Y, Fouad A, Pickren JW, Lane WW. Central nervous system metastasis from breast carcinoma. Autopsy study. Cancer. 1983;52(12):2349-54.
6. Koniali L, Hadjisavvas A, Constantinidou A, Christodoulou K, Christou Y, Demetriou C, et al. Risk factors for breast cancer brain metastases: a systematic review. Oncotarget. 2020;11(6):650-69.
7. Tsao MN, Lloyd N, Rebecca KS, Chow E, Rakovitch E, Laperriere N, et al. Whole brain radiotherapy for the treatment of newly diagnosed multiple brain metastases. Cochrane Database Syst Rev. 2012;2012(4):003869.

8. Leone JP, Leone BA. Breast cancer brain metastases: the last frontier. *Exp Hematol Oncol.* 2015;4:33.
9. Brackmann DE, Bartels LJ. Rare tumors of the cerebello-pontine angle. *Otolaryngol Head Neck Surg* (1979). 1980;88(5):555-9.
10. Hill BA, Kohut RI. Metastatic adenocarcinoma of the temporal bone. *Arch Otolaryngol.* 1976;102(9):568-71.
11. Rivlin N, Brosh R, Oren M, Rotter V. Mutations in the p53 tumor suppressor gene: important milestones at the various steps of tumorigenesis. *Genes Cancer.* 2011;2(4):466-74.
12. Alsner J, Yilmaz M, Guldberg P, Hansen LL, Overgaard J. Heterogeneity in the clinical phenotype of TP53 mutations in breast cancer patients. *Clin Cancer Res.* 2000;6(10):3923-31.
13. Ozlem Y, Barutca S. Biological subtypes of breast cancer: Prognostic and therapeutic implications. *World J Clin Oncol.* 2014;5(3):412-24.
14. Yamamoto M, Hosoda M, Nakano K, Jia S, Hatanaka KC, Takakuwa E, et al. p53 accumulation is a strong predictor of recurrence in estrogen receptor-positive breast cancer patients treated with aromatase inhibitors. *Cancer Sci.* 2014;105(1):81-8.
15. Voltan R. p53 and merlin tumor suppressors: Two of a kind. *E Bio Med.* 2018;37:23-4.

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