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Metastases to the skull occur in 25% of all malignancies and of this maximum are from either breast, lung or prostate. Solitary lesions to the skull present either as a painless lump or with cranial nerve palsies depending on the location in the skull. Management remains surgery alone or in combination with either radiotherapy / chemotherapy or both. We report an uncommon case of solitary metastases which turned out to be from breast carcinoma post-surgery.

Case report:

An 80-year female came with history of progressively enlarging painless lump over the right back side of head and reduced vision in her right eye for the past 3 months. She had no history of vomiting, seizure or other medical problems. She was a chronic smoker and alcoholic for past 20 years. On examination there was a hard, immobile mass over the right occipital area of 5X5 cm with normal skin and ill-defined margins. There was papilledema in the right eye. Computed tomogram/ Magnetic resonance imaging showed a large heterogenous, partly hyperostotic/osteolytic enhancing mass that had eroded through the bone and reaching up to the dural surface (Figure 1). There was no other bony or brain metastases. Chest X-ray, abdominal scan, whole spine screening, hematology and biochemistry were normal.

Intraoperatively there was heterogenous firm to solid, vascular with trabeculae, extending from the subcutaneous plane and through bone to infiltrate the dura. Wide resection with 1 cm margin was done of the mass, bone and dura followed by synthetic duroplasty and

Solitary Skull Metastases from Breast Carcinoma

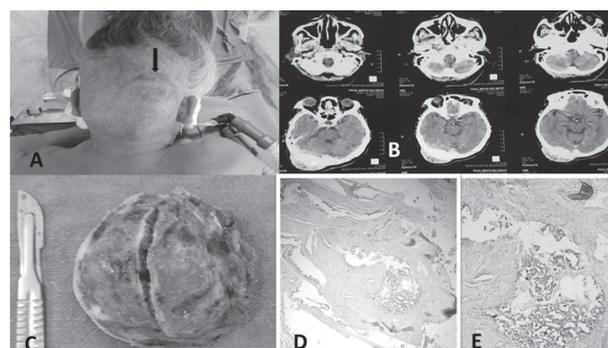


Figure 1: A. Clinical picture showing the right occipital mass (solid arrow). B. CT scan showing the hyperostotic lesion eroding through the bone. C. Intraoperative picture showing the complete excision of the tumor. D&E. Histopathology showing the Macroscopic and Microscopic features suggesting metastatic breast cancer.

bone cement cranioplasty. Staples were removed on the 9th postoperative day and the histopathology reported was surprisingly breast carcinoma. Grossly there is a soft tissue mass with invasion of the bone (Figure 1C), and 40x H&E stain and 100x H&E stain shows atypical cells forming glands and scattered singly with desmoplastic reaction. Some of the cyst shows capillary like projection with pseudostratification (Roman bridge). Bone destruction is also present (Figure 1.D & E).

Extensive search for primary in the breast was negative and postoperative CA 125 level was raised. She was advised to get a PET Scan, Mammography and Estrogen/ Progesterone receptor study for further Chemotherapy but the patient's relatives refused in view of her age. She was asymptomatic and slight improvement in her vision at one month follow up.

Discussion:

Metastasis to the skull occurs for around 25% of all malignant cases. Breast (20%), lung and prostate (38%) are the common source of metastases and the others include thyroid, renal, lymphoma, multiple myeloma, colon and melanoma.¹ Bone metastases can be present in around 50-70% breast cancer patient as detected by 99mTc scan.² In comparison dural and brain metastases are rarer in this group (10-15%).¹⁻⁴ The metastases can be multiple and involve the long bones and vertebrae. Solitary skull metastases are uncommon and must be distinguished from other osteolytic/blastic primary or secondary bone tumors (haemangioma, meningioma, fibrous dysplasia, multiple myeloma or epidermoid).

The common presentation is a lump over the head which is painless and increasing over the months, which is usually noticed by the family members.⁴ Depending on the site it can present with cranial nerve palsies, diplopia, headache, ataxia, vertigo and even focal motor deficits.⁵ Diagnosis is by either CT or MRI and even a PET scan if available. The imaging will show the type, number, site and relation to surrounding structures. CT may show trabeculated blastic/lytic lesions involving the calvarium. MRI in addition will show any brain metastases as ring enhancing lesions with edema. A study of tumor markers like CEA, CA125 and other markers of malignancies is to be done.

Surgical excision of the metastatic lesion whenever possible, removal of the primary tumor followed by chemotherapy gives the best chance for survival. Surgery should involve total excision of the bone along with the dura followed by Titanium mesh or bone cement cranioplasty. Localized radiotherapy or stereotactic radiotherapy is also beneficial in multiple inoperable cases or in those with skull base metastases.^{6,7} Chemotherapy is targeted for the primary tumor and recent Phase I studies have shown some benefit of Temozolamide alone or in combination with capecitabine is a well-tolerated regimen even in breast metastases.⁸⁻¹¹ A combination oral VRL plus capecitabine is another Phase II trial safe regimen used in cases which have already been treated with chemotherapy.¹²

There are no factors that define the exact prognosis but age less than 65 years and a Karnofsky score more than 70 are usually associated with better outcome.^{10,13} Although with poor outcome in most studies a study of 446 cases from France which were followed for 30 years there was reduced risk of death by 2.5% for each year.¹⁴ Better outcome is also present in HER2BC patients with good performance status, controlled primary disease with single brain metastases while those with metastatic triple negative breast cancer with metastases had poor outcome.^{15,16}

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