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Spinal Metastasis of Breast Cancer after 14 Years: A Rare Case Report

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Conflicts of Interest: Nil

Abstract

Breast cancer is a leading cause of mortality and morbidity in the developing as well as developed countries. The undermined pathophysiology is responsible for the diversity of presentation at the time of diagnosis, response to treatment and recurrence or metastatic potential of the disease. Bone is the most common site of metastatic recurrence in hormonal receptor positive (HR+) breast cancer. Sometimes an early stage breast cancer especially HR+ subgroup has the potential to recur or metastasize after long duration (<10 years) as spinal metastasis. The bone-only metastases in breast cancer have excellent clinical outcomes, which is developed mainly in the HR+ subgroup. This should be kept in the mind of treating oncologist during follow up treatment. We conclude that Hormonal therapy can be possibly given sequentially at intervals of 2-3 years as per the menopausal and hormonal status in contrast to the present protocol of continuous 5-10 years.

Keywords: Pathophysiology, HR+ subgroup (Hormonal Receptor positive), spinal metastasis.

Introduction:

The standard routines follow up duration for breast cancer (BC) patients is 6-10 years. Metastasis reported after 10 years of final diagnosis and treatment of primary cancer (BC) is known as late metastasis1. 20%-40% patients with breast cancer develop recurrence in distant organs. HR+ subgroup has high affinity to vertebral column 2. Bone is the most common site of metastatic recurrence in the breast cancer patients leading to considerable reduction in the quality of life. Thereafter Doctors consider different treatments to reduce pain, decrease tumor burden by Radiotherapy, Surgery or both to reduce possible neurological complications3.

Case presentation:

A 68 years female patient was diagnosed as invasive duct carcinoma (FNAC) grade 2 of the left breast in 2002. She had undergone Radical Mastectomy with removal of axillary lymph nodes. Her histopathology report for nodal status was negative and hormonal Status positive (HR+). She was treated with adjuvant chemotherapy radiotherapy (RT) and followed by hormonal therapy (Tamoxyfen 10 mg OD) for five years. She was apparently normal and no signs of recurrence or systemic metastasis during follow up check up till Jan 2016. In august 2016 she complained pain over the middle of the back radiating to epigastric region, loss of appetite, repeated attack common cold and generalized weakness. She was treated with a course of antibiotic, analgesic and proton pump inhibitor (PPI) by general physician. After 1 month suddenly she developed limping of left leg and advised MRI scan of dorso-lumbar

region. There were abnormal marrow signal involving T6 to T8 vertebral bodies. She was developed rapidly progressing paraplegia of lower limb and undergone laminectomy of T7 vertebra with partial removal of the tumor mass, which was subjected to histopathological study. The tumor mass revealed estrogen and progesterone receptor positive and human epidermal receptor (Her 2 status) negative. She presented to us for further advice. On examination her general condition was fair. There was no pallor, icterus, clubbing or any palpable lymphadenopathy. She was non-diabetic and non-hypertensive. There was evidences mastectomy with scar in her left chest wall but no palpable nodes underneath. The right breast was normal on palpation. Both axilla and supraclavicular regions were free from palpable nodules. Her abdomen was soft with no palpable spleen, liver or any other suspicious mass. Spinal examination showed a visible scar of spinal decompression operation with deep tenderness at T6-T8 vertebral level. Neurological examination revealed sensorimotor deficit over left leg but the right leg and cranial nerves were found to be normal.

Investigations: An MRI Scan of dorso-lumbar vertebra showed altered signal intensity SOL involving D7 vertebral body and posterior elements (Left>Right) cause compression of cord. There was no vertebral collapse. There was background degenerative disc disease as mild desiccation of multiple dorso-lumbar IV discs.

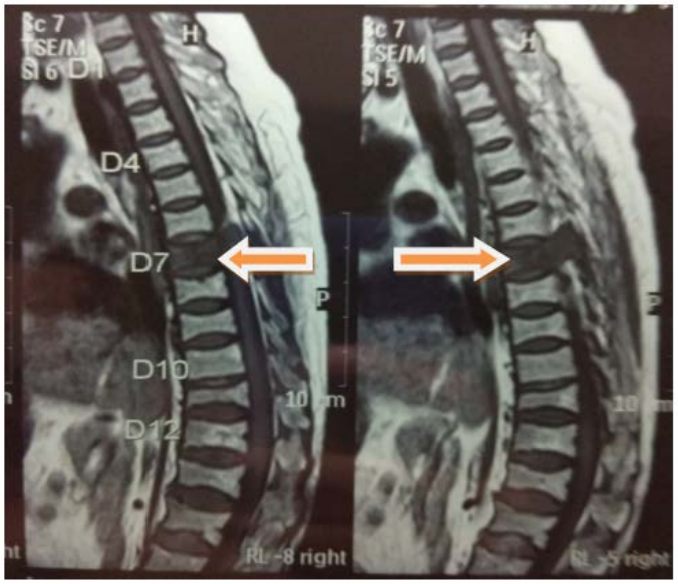

Figure 1: SOL involving D7 vertebral body and posterior elements (Left>Right) cause compression of cord (pink arrow).

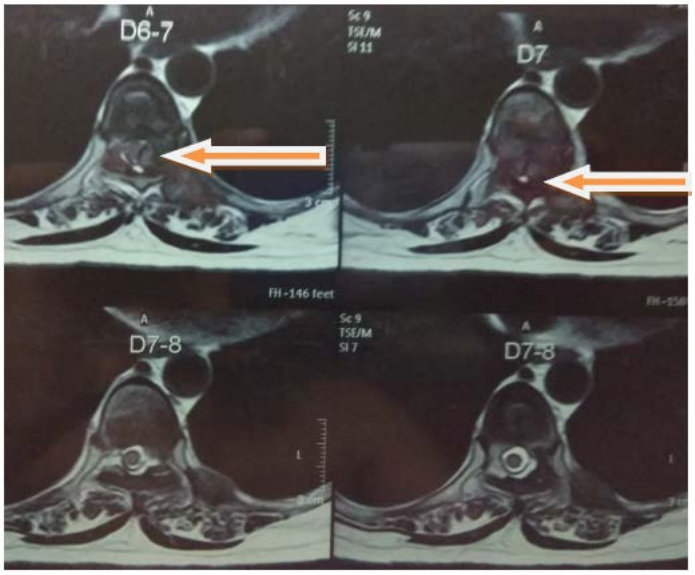

Figure: 2 Intra-Spinal (Extra-Dural) extension of in D6 and D7 vertebra (pink arrow).

Following this screening investigation and sensorimotor deficit, she had undergone Laminectomy with excision of extradural tumor of (D6-D7) vertebra on 28/10/2016. The excision biopsy was reported to have adeno-carcinoma with Indian file growth pattern ER, PR positive and HER2 negative. She was further subjected to Positron Emission Tomography (PET) of whole body to rule out any

systemic metastasis. The PET scan report was apparently normal for involvement of other vital organs.

Treatment:

She was planned to receive palliative RT with the dose of 30 Gy/10# trans-abdominally covering D6-D8 vertebra with an aim to relieve neuralgic pain as well as to decrease the tumor burden to alleviate cord compression. She was advised Zoledronic acid 4mg/100 ml NS infusion monthly for one year to prevent of skeletal related events like pathological fractures, spinal compression and tumor-induced hypercalcaemia. She was allowed to continue Tab letrozole 2.5mg per oral once daily as hormonal therapy.

Outcome and follow up:

She was tolerated the treatment well feeling better and adequate pain relief. She was seen after three months of completion of therapy, her locomotion improved from near paraplegic state to walking by a stick and there was mild pain in the middle of the back. She was advised to continue the above treatment. She was reviewed after 10 months of the treatment. Now she is apparently alright, walking unsupported and able to carry out her day to day activities.

Discussion:

The present case presented with spinal metastasis after 14 years is rare and known as late metastasis 1. There is only bone (D6, D7, D8) metastasis and other systems are normal with hormonal status is HR positive and HER negative2,3. She improved considerably by surgery, radiotherapy and hormonal treatment as per her menstrual status4. Different subtypes of breast cancer show different metastatic behavior in relations to anatomic sites where cancer cells remain dormant or proliferate slowly5. The bone is the most common site of metastasis and breast cancer has a particular affinity for the spine in hormonal receptor positive (especially estrogen receptor positive) cases6. When a patient with known history breast malignancy presents pain in the mid thoracic region should be evaluated thoroughly with suspicion of metastatic disease of spine as degenerative disorders are less likely affect the thoracic spine rather than cervical and lumbar spine7. So the patient should be investigated quickly by the available imaging devices to diagnose metastatic bone disorders by X ray, Computerized Tomography or Positron Emission Tomography (PET) of whole body6. Radiotherapy (RT) is the gold standard treatment for vertebral metastasis but spinal decompression followed by radiotherapy in further advanced cases8. Hormonal therapy should be given in HR+ positive cases depending upon the menopausal status9. Late relapse is not so

common in breast cancer but can occur in any stage. Therefore, we suggest lifetime follow up for every cancer survivors with breast cancer including DCIS cases **10.**

Conclusion:

Breast cancer is a systemic disease. 20%-40% patients with breast cancer develop recurrence in distant organs. HR+ subgroup has high affinity to vertebral column. Clinical examination and thorough past history with appropriate imaging and histopathology is the mainstay towards the diagnosis of metastases. Radiotherapy is remained as the effective palliative treatment for spinal metastasis. In HR+ Subgroup should be treated with appropriate hormonal therapy according to menopausal status in addition to Radiotherapy (RT). Lastly we hypothesised that hormonal therapy can possibly be given at intervals of 2-3 years sequentially as per the menopausal and hormonal status in contrast to the present protocol of continuous 5-10 years to prevent future relapse and morbidity.

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