

Letter to the Editor

Is there need of Bone Scan Before Doing Breast Cancer Surgery? A Regional Cancer Centre Experience

Sir,

Cancer Breast in Rajasthan, Punjab & Hariyana accounts about 12-13% of total cancer cases attending out patients & about 25-30% of total female cancer load. Combined modality treatment including surgery, chemotherapy & radiotherapy in different combinations is the peripheral standard treatment. Proper pre-treatment evaluation including for bone metastasis is important, as it affects the treatment outcome & prognosis. In the peripher hospitals many surgeon operates the cancer breast patients & finally the patients reaches at medical colleges & the regional cancer centers. At our center we analyzed the Bone scan of these cases who reported within 2 months of breast surgery. After bone scan reports, clinical & prognostic parameters, patients were treated by chemotherapy, radiotherapy, hormone therapy as per protocol.

99m Tc-MDP 20 mCi was injected intravenously. Proper hydration & urine output was maintained and after 3 hours total body bone scan was acquired with the help of dual head variable angle gamma camera. 205 patients of cancer breast with or without preoperative stage of disease and reported within 2 months of surgery underwent bone scan before planning chemotherapy and radiotherapy. Standard criteria were followed to label metastasis lesion in bone scan. History of injury, infection & stress fractures were ruled out.

Out of 126 patients with unknown preoperative clinical stage, 50% (n=63) had bone metastasis.

There were 79 cases with known preoperative stage. Of this group, 1 out of 3 in clinical stage I (33%), 3 out of 16 (19%) in stage II, 18 out of 33 (55%) in stage III & 20 out of 27 (74%) in stage IV had positive bone scan for metastasis.

When malignant cells metastasize to bones, a reactive osteoblastic activity starts. Some osteolytic activity is also observed. Osteoblastic

cells have high metabolism with increased turnover of calcium and phosphates. This favors 99m Tc-MDP to concentrate in high concentration resulting in hot spot, interpreted as metastasis. In case of osteolytic lesion, (primary or metastasis), as there is decreased turnover of calcium and phosphates, 99m Tc-MDP deposition is less and looks as cold spot.

Any lesion to be evident in X-ray/CT scan, about 40-50% bone damage has to occur where as only 5% bone damage can be seen in bone scan. This favors the need of total body bone scan. Thus bone scan is useful to plan the treatment & predict prognosis.

Mitsuru et al¹ analyzed 5538 Japanese Breast cancer patients to determine Bone Metastasis status. They observed that incidence of Bone metastasis in stage I was 0.08%, stage II-1.09%, stage III-9.96% & stage IV 34.04%. They concluded that bone scintigraphy should be advised where incidence of bone metastasis is more than 3% (stage II with large tumours, high-grade histopathology & stage III, IV).

Another study analyzed retrospectively 1190 operable breast cancer patients for bone scan & found that 78 patients had bone metastasis.

Similar results have been reported from India³ and elsewhere.^{4,5}

Our retrospective analysis of patients treated by modified radical mastectomy at peripheral hospitals (district level/ private hospitals) shows that 126 patients did not have preoperative clinical stage & bone scan done at our center within 2 months of surgery were suggestive of positive bone scan in 63 cases (50%). Out of preoperative known clinical stage, 1/3, 3/16, 18/33 & 20/27 (33%, 19%, 55%, 74%) had bone scan positive in clinical stage I, II, III & IV, respectively. This shows that if prior bone scan would have been done in these cases, a better treatment plan was possible.

Table-1 Bone Metastasis: Cancer Breast: Preoperative stage known.

Clinical Stage	Bone scan	Positive	Positive %
Stage-I	3	1	33.33
Stage-II	16	3	18.75%
Stage-III	33	18	54.55%
Stage-IV	27	20	74.07%
Total	79	42	50%

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