ABSTRACT

This is a case report describing a patient at Sultan Qaboos University Hospital, Oman, with recurrent local breast cancer and axillary lymph node metastasis. The cancer was detected with 99Tc- Tetrofosmin scintimammography after an equivocal mammography study.

Keywords: Breast Scintigraphy, Tc-99m Tetrofosmin; Mammography; Breast Cancer; Case report; Oman.

**Tc-99m Tetrofosmin Scintimammography for the Detection of Recurrent Breast Cancer in a Patient with Equivocal Mammography Study**

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**CASE**

A 42 years old female underwent right breast lumpectomy for breast cancer at a hospital in Oman. Six months later, she presented to the surgical outpatient department at Sultan Qaboos University Hospital for follow up. Her clinical examination, which is not the focus of this report, did not reveal any abnormality except a surgical scar in the right breast. A mammography was performed, which showed an equivocal residual tumour at the lumpectomy site with pathologic right axillary lymph nodes and underlying seroma [Fig 1].

A scintimammography was performed using 740 MBq of Tc-99m tetrofosmin which was injected in the arm contra-lateral to the mammary lesion. Ten minutes later, planar imaging was performed using a rectangular, large field of view, dual-head gamma camera equipped with low-energy, high-resolution, parallel-hole collimators. A 10% window and a 140-keV photo peak were selected. Planar images were acquired in...
both anterior and lateral views, with a 256 x 256 matrix size, an acquisition time of 600 s per view. First, the anterior planar view was acquired in the supine position; both breasts and the axillae were included in the field of view. The procedure is well described in the European Association for Nuclear Medicine’s guidelines for breast scintigraphy.

The scintimammography showed abnormal uptake in the right breast indicating recurrence of breast cancer, and abnormal uptake in the right axilla indicating lymph node metastasis [Fig 2].

The patient subsequently underwent right modified radical mastectomy with right axillary lymph node dissection. The histopathological findings were fibrocystic changes and duct ectasia. There were foci of residual high grade ductal carcinoma in situ and axillary lymph nodes positive for tumour metastasis.

**DISCUSSION**

Mammography combined with clinical examination represents the method of choice both in the screening and in the diagnosis of primary and recurrent breast cancer, demonstrating high sensitivity even in the detection of small non-palpable lesions. However, mammography can also yield false-negative results in some cases; in addition, it is characterized by low specificity and a low positive predictive value.

Scintimammography with the cationic lipophilic oncotropic radiotracers, Tc-99m methoxyisobutylisonitrile (MIBI) and Tc-99m tetrofosmin have proved useful methods for the detection of primary breast cancer and the differentiation of malignant from benign mammary lesions. Two recent meta-analysis studies showed that there is evidence that scintimammography is a robust imaging technique delivering high sensitivities and specificities in patients studied in both single-centre and multi-centre trials and, as such, can be relied on as an adjunctive method for the investigation of primary breast cancer with sensitivity range of 85% - 87.8% and specificity range of 83% - 86.9%.

We preferred the use of tetrofosmin to MIBI for scintimammography because of its more favourable pharmacokinetics: its faster and greater clearance from the lungs and liver allow a higher target to background ratio.

The detection of recurrent breast cancer by mammography is a challenging task because architectural changes (mainly fibrosis) and scarring secondary to surgery and radiotherapy, cause difficulties in the in-

*Figure 1: Right breast mammography showing heterogeneity of parenchyma with spiculations extending towards pectoralis muscle, seen under surgical scar site in supero-lateral quadrant*

*Figure 2: Tc-99m Tetrofosmin showing abnormal uptake in the right breast (grey wide arrow), and abnormal uptake in the right axilla (black dotted arrow)*
interpretation of mammograms. In a prospective trial performed to assess the accuracy of Tc-99m-MIBI scintimammography in women with suspected recurrent breast cancer in the breast and/or locoregional tissues, the sensitivity was 78% in detecting recurrent disease, compared with 55% for mammography. In addition, scintimammography identified 63% of axillary lymph nodes with recurrent tumour.

**CONCLUSION**

Scintimammography should be performed in patients with recurrent breast cancer and equivocal mammography results.

**REFERENCES**