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CASE REPORT

An Incidentally Detected Breast Cancer on TC-99m MIBI Cardiac Scintigraphy

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Tc-99m methoxyisobutylisonitrile (MIBI) scintigraphy is generally used as a second-line diagnostic tool for obscured breast lesions. When the entire field of view is examined carefully, it is often possible to detect additional lesions unrelated to the initial intent and purpose of the examination. Herein we present a case of breast cancer incidentally detected by cardiac Tc-99m MIBI scintigraphy. An area of uptake was detected in the breast during a cardiac imaging test. Further evaluation of this lesion revealed a histopathological diagnosis of invasive ductal carcinoma of the breast. Sensitivity of this scintigraphic technique is not enough sufficient to use this test as a screening test for breast cancer, but it may provide supplemental information. Since it is not uncommon to find incidental lesions during imaging studies, examination of the image field may help clinicians find otherwise unrecognized or undiagnosed pathologies.

Key Words: *Breast, Carcinoma, Scintigraphy*

INTRODUCTION

Tc-99m methoxyisobutylisonitrile (MIBI) scintigraphy is a functional imaging test that was introduced in early 90s, and is now widely used for cardiac imaging. Incidental findings on cardiac imaging are not uncommon [1]. The larger the field of view, and more views obtained, the greater are the variety and number of innocent and significant lesions detected [2]. Should nuclear medicine specialists look for and report incidental findings identifiable during cardiac imaging examinations? As reported by Northam et al. [3] they most certainly should.

Although scintimammograraphy is not the primary diagnostic method for breast cancer it has been recommended in complement for challenging cases where other imaging methods are inconclusive [4]. Furthermore, Tc-99m MIBI is the recommended radiopharmaceutical for sentinel node detection in patient with breast cancer [5]. There have been rare reports about incidental breast cancer diagnosis by Tc-99m MIBI scintigraphy performed for the diagnosis of other pathologies [6]. Also, there are a few reports in medical databases about incidental detection of breast cancer during other nuclear imaging techniques performed for other diagnostic purposes [7,8].

We herein report a case of breast cancer case that was histopathologically diagnosed after an incidental imaging by Tc-99m MIBI scintigraphy.

CASE REPORT

A 29-year-old female patient was admitted to the cardiology clinic for chest pain. After clinical examination, a Tc-99m MIBI myocardial perfusion scintigraphy was performed. According to the report her cardiac findings were normal but in the field of view there was an area of focal accumulation in the lateral part of left breast, and further examination was recommended (Figure 1). The patient was therefore referred to the department of surgery for breast examination. A 4×4 cm sized, immobile solid lesion was detected in the lateral inferior quadrant of her left breast in physical examination. Ultrasound revealed a 24×18 mm sized spiculated mass lesion which contained microcalcifications in addition to a heterogeneous hypoechoic area filling the lateral inferior quadrant of the left breast. There were also multiple axillary lymphadenopathies, the greatest size of which was 13.5×13.5 mm. The lesion was classified as BIRADS 5 (Figure 2). Fine needle aspiration cytology was reported as suspicious for malignancy. Further test revealed no distant metastasis.

A two-step operation was scheduled. First, the lesion was excised totally and sent to histopathology department for frozen

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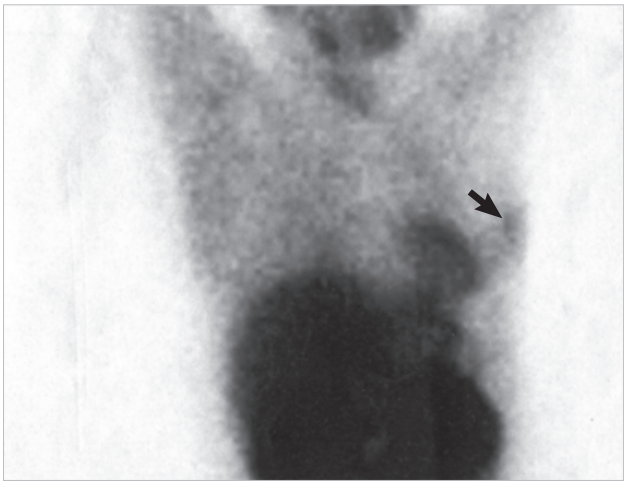

Figure 1. Scintigraphic image showing accumulation in left breast (arrow showing breast accumulation).

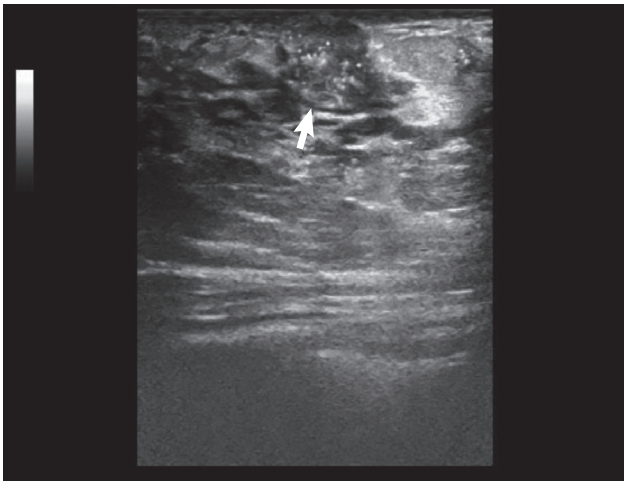

Figure 2. Ultrasonographic image of the breast lesion (arrow pointing the mass).

section examination. After receiving a confirmed diagnosis of "infiltrative ductal carcinoma" a modified radical mastectomy was performed. The histopathologic examination report of the specimen was infiltrative ductal carcinoma in the 4 cm tumor and 4 out of 28 dissected lymph nodes were found to be metastatic. The tumor was staged as pT2N2M0.

DISCUSSION

Although mammography has a relatively high sensitivity of 80% to 90%, especially in examination of older women, it is less reliable for detecting lesions in dyspalstic and dense breast [9]. The major drawback of mammography is its low specificity and low positive predictive value of only 10% to 35% for non-palpable cancers [10].

Tc-99m MIBI is widely available as a myocardial perfusion imaging agent. The uptake of Tc-99m MIBI in breast cancer was first reported in 1992 [11]. MIBI was subsequently studied by many investigators for imaging of non-palpable breast lesions, staging of breast cancer, lymph node imaging and to document the extensiveness of breast cancer lesions and as prognostic marker for chemotherapy response. Although this radiopharmaceutical may not be sensitive enough to serve as a screening test, it is useful in the evaluation of patient with inconclusive breast examinations as a second line diagnostic tool [12]. The overall sensitivity and specificity of Tc-99m MIBI scintigraphy is respectively 75.4% and 82.7% [13]. Tc-99m MIBI scintigraphy has a sensitivity of 84.2% and a specificity of 90.9% in detecting axillary metastasis [14]. The sensitivity and specificity is higher in palpable lesions but in such cases, other tests like ultrasonography and mammography are more useful for diagnosis. It is reported lower sensetivity and specificity in non-palpable lesions. In the postpartum period diffuse uptake of Tc-99m sestamibi can be seen in non-cancer breast tissue due to lactation [15].

Once an examination is performed, a wide surgical approach must be done and all available data must be evaluated to apply appropriate judgement and to proceed in the best interset of the patient. As in this case, some times patients may have breast masses or other lesions that are not yet discorvered. Since it is not surprising to find incidental lesions during imaging studies, examination of the image field in its entirery consideration of all the data may assist clinicians in the diagnosis of previously undetected illnesses.

CONFLICT OF INTEREST

The authors declare that they have no competing interests.

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