

# Multiple Breast Masses in a Case of Multiple Myeloma

Afshan Fayyaz<sup>1</sup> and Umar Fayyaz Ghani<sup>2</sup>

## ABSTRACT

Myeloma of the breast is a rare entity with only a few reported cases in the literature. It is usually secondary to adjacent bone disease with only a few instances of primary involvement of the breast. We present a rare case of plasmacytoma of left humerus that presented with multiple breast masses and skin nodules. Histopathology of the breast and skin nodules showed plasma cells consistent with the diagnosis of multiple myeloma.

**Key words:** *Multiple myeloma. Plasmacytoma. Breast. Metastatic disease.*

## INTRODUCTION

Multiple myeloma is a disease of plasma cells and accounts for 1% of all 10% of hematological malignancies.<sup>1</sup> It occurs primarily in middle-aged individuals. The incidence of multiple myeloma in the US population is 3-4 cases/100,000 population with 14,000 new cases diagnosed each year.

The primary site of involvement in the disease is the skeleton which accounts for 97% of the cases. About 3% of the cases involve the soft tissues.<sup>2</sup> Soft tissue involvement is often secondary to skeletal involvement. Isolated involvement of soft tissues is much rare. The most frequent site of soft tissue involvement is the upper airways.<sup>3</sup>

The involvement of breast with multiple myeloma has been rarely reported. Only 12 cases of breast plasmacytoma were reported till 2002.<sup>4</sup> We present the features of multiple myeloma involving the breast along with a brief review of the literature.

## CASE REPORT

A 43-year-old female who was a diagnosed case of plasmacytoma of left shoulder for the last two and a half years was referred for sonomammogram after mammography. She gave one-and-a-half month history of development of breast lumps. X-ray mammogram showed multiple well-defined soft tissue density masses involving all the quadrants of both the breasts (Figure 1). Breast examination revealed multiple discrete nodules all over both the breasts. The nodules were firm on palpation. The radiographic size corresponded with the

size on palpation. Overlying skin was normal. Multiple nodules were present in the subcutaneous tissues of the back and shoulders. Overlying skin was normal. Sonomammogram showed multiple hypoechoic well-defined rounded nodules scattered all over the breast parenchyma. Nodules of similar echotexture were present deep to the skin around the shoulders and back. All the nodules exhibited homogeneous echotexture with mild posterior acoustic enhancement (Figure 2). No remarkable vascularity was observed in the breast nodules. Doppler study of the nodules over the back, neck and shoulders showed blood flow with low resistance flow pattern (Figure 3). Biopsy of a few of the lumps from breast and back showed plasma cell tumour consistent with multiple myeloma. Since all the masses had a similar configuration on mammogram and on ultrasound, diagnosis of soft tissue myeloma was made. Skeletal radiographic survey of the patient showed lytic lesion in the head and neck of left humerus. Rest of the bones were normal. Bone scan was done with Tc<sup>99m</sup> MDP, which showed uptake in left scapular region. Serum protein electrophoresis showed monoclonal gammopathy. Urine was positive for Bence Jones protein. Serum calcium levels were high at 3 mmol/L.

After initial diagnosis, patient had been given 10 shots of chemotherapy to her left shoulder with no significant improvement in the patient's symptoms. She died 4 months after the development of breast and soft tissue masses.

## DISCUSSION

Multiple myeloma is a monoclonal gammopathy with an M band on serum protein electrophoresis. It primarily affects the skeleton. Secondary involvement of soft tissues is rare and breast involvement with multiple myeloma is even rarer.

Either unilateral or bilateral, myeloma breast disease may occur. The ultrasound appearances of the breast disease are varied from a benign appearing lesion to ill-defined masses.<sup>5</sup> The primary differential is from

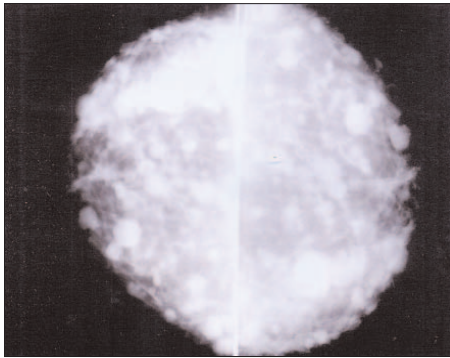
<sup>1</sup> Department of Radiology, Combined Military Hospital, Rawalpindi.

<sup>2</sup> Department of Surgery, Combined Military Hospital, Sialkot.

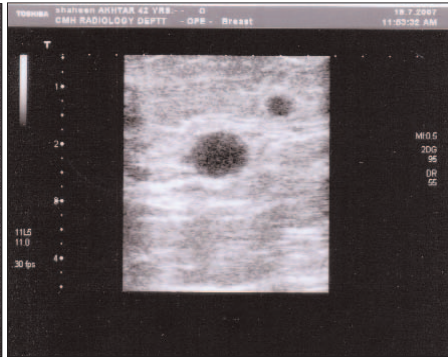
**Correspondence:** Dr. Afshan Fayyaz, House No. 17-B, RR Camp Road, Rawalpindi.

E-mail: afshan\_fayyaz@hotmail.com

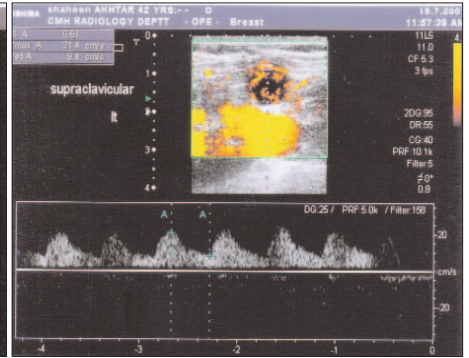
Received November 25, 2008; accepted May 05, 2009.



**Figure 1:** Bilateral mammogram showing multiple well-defined nodules of different sizes in the breast parenchyma.



**Figure 2:** Sonomammogram showing hypo-echoic solid nodules with mild distal acoustic enhancement.



**Figure 3:** Doppler study of the nodules showing blood flow with low-resistance flow pattern and RI of .61.

metastatic disease of breast. Breast myeloma and breast metastases differ from primary breast carcinoma in being multiple, well-defined, and having no discrepancy between size of the lesion and actual size on palpation. Microcalcifications of primary breast malignancy are absent in metastatic disease and breast myeloma. Characteristic secondary changes in the breast due to breast carcinoma, as architectural distortion, skin tethering, oedema of surrounding tissues, are also absent.<sup>6,7</sup> In this patient, multiple superficial and deep nodules were present in breast and in the skin around the left shoulder with the radiographic size which corresponded with the size on palpation. The nodules were well-defined with mild posterior acoustic enhancement. Brem *et al.*, have described a case of plasmacytoma of breast with similar radiographic features.<sup>4</sup> There have been reports in which the nodules in histologically proven cases of myeloma breast were ill-defined with posterior acoustic enhancement.<sup>8</sup> Biopsy of the nodules differentiates between these entities.

Malignant breast masses have more blood flow and a high resistance flow pattern with  $RI > 1$  and  $PI > 4$  having a high positive predictive value for malignancy.<sup>9</sup> In this case, Doppler ultrasound did not show significant flow in the breast nodules. Flow in the extramammary nodules, however, showed significant diastolic component.

The median survival in multiple myeloma is approximately three years. The more advanced the disease, the worse the prognosis. The patient was in an advanced stage of the disease as indicated by bone as well as soft tissue involvement and hypercalcaemia and succumbed to her illness within a span of two years. Patients with a low beta2-microglobulin level tend to have a better prognosis. The presence of a chromosome 13 deletion has been shown to have a significant

negative impact on outcome. An elevated lactate dehydrogenase level is associated with a grim prognosis.<sup>10</sup>

To conclude, the diagnosis of breast myeloma should be considered in a patient with multiple breast masses in known myeloma cases and as a differential of metastases.

### REFERENCES

1. Angtuaco EJ, Fassas AB, Walker R, Sethi R, Barlogie B. Multiple myeloma: clinical review and diagnostic imaging. *Radiology* 2004; **231**:11-23.
2. Innes J, Newall J. Myelomatosis. *Lancet* 1961; **1**:239-45.
3. Basset WB, Weiss RB. Plasmacytomas of the breast: an unusual manifestation of multiple myeloma. *South Med J* 1979; **72**:1492-4.
4. Brem RF, Revelon G, Willey SC, Gatewood OM, Zeiger MA. Bilateral plasmacytoma of the breast: a case report. *Breast J* 2002; **8**:393-5.
5. Revelon G, Sherman ME, Gatewood OM, Brem RF. Focal fibrosis of the breast: imaging characteristics and histopathologic correlation. *Radiology* 2000; **216**:255-9.
6. Bohman LG, Bassett LW, Gold RH, Voet R. Breast metastases from extramammary malignancies. *Radiology* 1982; **144**:309-12.
7. McCrea ES, Johnston C, Haney PJ. Metastases to the breast. *AJR Am J Roentgenol* 1983; **141**:685-90.
8. Donovan AJ. Bilateral breast cancer. *Surg Clin North Am* 1990; **70**:1141-9.
9. del Cura JL, Elizagaray E, Zabala R, Legórburu A, Grande D. The use of unenhanced doppler sonography in the evaluation of solid breast lesions. *AJR Am J Roentgenol* 2005; **184**: 1788-94.
10. Fassas AB, Tricot G. Chromosome 13 deletion/hypodiploidy and prognosis in multiple myeloma patients. *Leuk Lymphoma* 2004; **45**:1083-91.

