

# Extramedullary Plasmacytoma of the Breast: A Case Report and Literature Review

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**Abstract-** Breast plasmacytoma is a rare neoplasm. Here we present a case of extramedullary plasmacytoma of the breast in a 41-year-old Iranian lady who was a known case of spine plasmacytoma. Two years ago study case was presented with severe back pain. At that time, MRI revealed an expansile and destructive lesion in the body of S<sub>1</sub> which was suggestive of metastasis. The patient underwent incisional biopsy that was a representative of a plasmacytoma. Skeletal survey, bone marrow aspiration, and serum protein electrophoresis were negative. The patient received radiation therapy. This year (2 years later) she detected a mass in her right breast. A mammography revealed a 30 mm high-density mass with an ill-defined border in the right breast. The mass was excised, and histological examination confirmed the diagnosis of plasmacytoma. Although plasmacytoma of the breast is rare, this tumor should be considered as a differential diagnosis of a breast mass, especially in patients with plasma cell dyscrasias.

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## Introduction

Extramedullary plasmacytoma is defined as a malignant neoplasm which is composed of neoplastic plasma cells, and there is no evidence of any bone lesion.

Although this tumor can be seen in any site, the upper respiratory tract is commonly involved. Many of these patients eventually progress to multiple myeloma. Generally, in the breast, extramedullary plasmacytoma is rare either as a singular neoplasm or as a proof of advanced multiple myeloma. Its clinical and imaging aspects are analogous to other breast malignancies and consequently can cause an undue mastectomy. Correct diagnosis depends on histological or cytological examination. The majority of patients are females, and the reported mean age is 53 years (1). The lesion may be solitary or multiple, unilateral or bilateral.

Its size ranges between 1 and 7.5 cm and in some patients axillary lymph nodes are involved (2). The outcome of patients appertains to whether the tumor is

primary in the breast or portion of advanced multiple myeloma. Here we describe a case of breast plasmacytoma along with concise literature review.

## Case Report

A 41-year-old female who was a known case of spine plasmacytoma (2 years ago) was referred to our hospital with a complaint of a lump in her right breast. She had detected this mass several weeks ago. On physical examination, one distinct mass measuring 5x4x4 cm in the upper quadrant of the right breast was identified. The lump was firm, and not attached to the overlying skin. It was not painful to palpation. The axillary lymph nodes had not enlarged. Overlying skin was not erythematous. Plasma proteins electrophoresis, liver function tests, renal function tests, electrolytes, and abdominal ultrasonographies were normal. Mammography showed a 30 mm high-density mass with an ill-defined border in the right breast, and the left breast was unremarkable (Figure 1).

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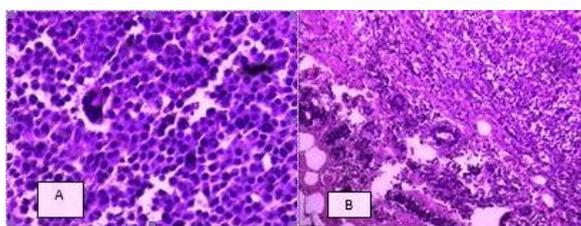
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An excisional biopsy of the lump was done, and the resected specimen was sent to the pathological laboratory. Grossly, the specimen consisted of 3x3x2 cm, creamy, meaty mass surrounded by ordinary breast

tissue. Microscopically the tumor composed of the neoplastic plasma cells with a great content of cytoplasm and eccentric nuclei (Figure 2).



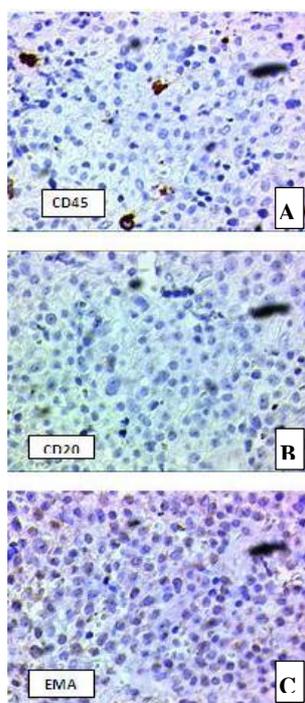
**Figure 1.** Mammography showed a 30 mm high-density mass with an ill-defined border in the right breast, and the left breast was unremarkable



**Figure 2.** (A,B) Sections revealed neoplastic plasma cells with a great content of cytoplasm and eccentric nuclei .Many of the cells were mature, and there were giant myeloma cells (H and Ex10, 40)

Many of the cells were mature, and there were giant myeloma cells. Immunohistochemically, the cells were

focally positive for vimentin and EMA and negative for CD45 and CD20 (Figure3).



**Figure 3.** (A,B,C) Immunohistochemically, the cells were focally positive for EMA and negative for CD45 and CD20

## Extramedullary plasmacytoma

As a result, the final diagnosis of plasmacytoma was made. Then, a scrutiny works up for a multiple myeloma was done. Serum protein electrophoresis and skeletal survey were negative.

A bone marrow biopsy and aspiration revealed that there was no evidence of marrow involvement. Consequently, a diagnosis of breast plasmacytoma was confirmed. The patient received chemotherapy (Bortezomib 1.3mg/m<sup>2</sup>D1 D4 D8 D11 q3w, cyclophosphamide 750 mg/m<sup>2</sup> D1q3w for 6 cycles).

## Discussion

Overall, the prevalence of plasmacytoma of breast is almost 0.01% (3). According to Surov *et al.*, (4). The prevalence of breast involvement in cases with plasma cell myeloma is 1.5%. In young patients plasma cell myeloma is rare, and only 2.2% of plasma cell dyscrasia is seen in patients younger than 40 years (5). Our patient was 39-year-old on her initial admission. The vast majority of multiple myelomas are secretory and non-secretory type is rare (6). Our patient had normal serum protein electrophoresis.

Extramedullary plasmacytoma of the breast can be unilateral or bilateral. It usually presents as palpable mammary lump and mastodynia, skin redness and regional lymph node enlargement are uncommon. Imaging findings of breast plasmacytoma are various (4). The clinical exhibition of plasmacytoma of the breast is reported by Lamy *et al.*, (7). However, the authors did not describe its imaging findings. Surov A *et al.*, described clinical and radiological data regarding breast involvement in plasmacytoma (4). They described two important mammography findings: mass and diffuse infiltration. The mentioned mass was dense with well or ill-defined borders and had round or ovoid shape. The authors stated that there was not microcalcification in their cases. In the presented case there was a 30 mm high-density mass with an ill-defined border in the right breast and the left breast was unremarkable. Breast plasmacytoma usually reveals intra-lesional contrast enhancement on MRI (7). MRI was not applied in the presented case. Radiologically, primary and secondary breast plasmacytoma cannot be discriminated. Since extramedullary breast plasmacytoma does not have any unique clinical or imaging aspects, definite diagnosis should be confirmed by histology (8). The histologic differential diagnosis of a breast plasmacytoma consists of both benign and malignant lesions. These entities are composed of plasma cell mastitis which consists of

mixed chronic inflammatory cells with many plasma cells. These cells surround the dilated ducts. The lumen of the mentioned duct is filled with histiocytes and cell debris. Pseudolymphoma is another imitator. Pseudolymphoma is a rare, perhaps reactive lesion containing mixed inflammatory cells, especially lymphocytes with lymphoid follicle formation. Non-Hodgkin lymphoma with plasmacytic differentiation can cause diagnostic problem. However, breast lymphoma usually represents a secondary involvement of a primary nodal lymphoma. In addition, IHC stains such as CD45, CD20, and CD79 are helpful (9). Plasmacytoma may be misdiagnosed as malignant melanoma. However, the neoplastic melanocytes are pleomorphic with eosinophilic nucleoli. Again these cells are positive for S100 and HMB-45. Finally, an anaplastic plasmacytoma may be easily mistaken for carcinoma (10). IHC stains are essential diagnostic tools. Owing to the rarity of this tumor, experience in treatment is restricted. But, excisional biopsy and radiation therapy with or without chemotherapy can control the disease. These patients should be followed meticulously as many of them ultimately progress to multiple myeloma. It is stated that primary breast plasmacytoma has a better outcome in comparison to secondary form (7). Our index patient received chemotherapy. In conclusion, breast plasmacytoma should be thought out in a patient with breast lump especially in a known case of plasmacytoma. Breast plasmacytoma must be discerned from breast carcinoma to avoid undue radical mastectomy. Careful follow up of these patients is advised as many of them ultimately progress to multiple myeloma.

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