*American Journal of Medical Case Reports, 2018, Vol. 6, No. 2, 26-29*
Available online at http://pubs.sciepub.com/ajmcr/6/2/4

DOI:10.12691/ajmcr-6-2-4

# Invasive Ductal Carcinoma of the Breast with Medullary Features or Medullary Carcinoma of the Breast: A Challenging Histopathological Case Report with Review of Literature

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**Abstract** Medullary Breast carcinoma (MBC) is an infrequent type of breast cancer and is in the differential diagnosis of invasive ductal carcinoma (IDC) with medullary features. We reported a 35-year-old lady with left breast since 6 months ago. CEA tumor marker serum level and CA15-3 were within normal limits. The patient underwent the incomplete left mastectomy. Gross specimen revealed gray-yellow hemorrhagic tumor lesion with pushing border. Histopathology demonstrated highly atypical cells with lymphocytic infiltration and mainly pushing border but with infiltrative margin in few areas. The permanent diagnosis was "invasive ductal carcinoma with medullary features". We conclude that careful histopathological evaluation and considering strict criteria is necessary for definitive diagnosis and subsequent proper treatment.

***Keywords:*** *invasive ductal carcinoma, medullary carcinoma, breast cancer, case report*

**Cite This Article:** Mazaher Ramezani, Shima Jalalvandi, Fatemeh Rezaali, and Masoud Sadeghi, "Invasive Ductal Carcinoma of the Breast with Medullary Features or Medullary Carcinoma of the Breast: A Challenging Histopathological Case Report with Review of Literature." *American Journal of Medical Case Reports*, vol. 6, no. 2 (2018): 26-29. doi: 10.12691/ajmcr-6-2-4.

## 1. Introduction

Medullary Breast carcinoma (MBC) is an infrequent type of Breast cancer. It accounts for 1-6% of all invasive breast cancers [1]. It usually affects younger age women [2]. MBC almost has the benign appearance and well-demarcated mass in physical examination and ultrasound [3], but in a histopathological specimen, it is composed of poorly differentiated malignant cells with prominent lymphoplasmacytic infiltration [4]. This histopathological pattern also is seen in invasive ductal carcinoma (IDC) with medullary features [3]. It has been reported that MBC despite of its histological pattern has a more favorable prognosis than IDC with medullary features. This difference of prognosis leads to different treatment approach like neo-adjuvant therapy [4]. If pathologists and clinicians misdiagnose IDC with medullary features as MBC, it may have worse and irreversible effects on patients who go to under treatment [5]. So our aim was to report this case for avoiding misdiagnosis of IDC with medullary features as MBC and preventing the subsequent poor outcome.

## 2. Case Report

A 35-year-old lady was admitted to the department of surgery on 7th June 2017 with the sensation of mass in left breast since 6 months ago. All the evaluation in past medical history, drug history, family history and physical examination was unremarkable except for palpable mass in the left breast with no axillary lymphadenopathy. Lab data showed normal complete blood count, FBS, Urea, Cr, SGPT, SGOT, and Alkaline phosphatase. HIV antibody, HBs Ag (Hepatitis B surface antigen) and HCV antibody were non-reactive. Vitamin D was 12.4 ng/ml (Sufficient range: more than 30, insufficient range: 10-30 ng/ml). CEA tumor marker serum level was 0.46 ng/ml (Nonsmoker reference range: less than 5.0 ng/ml) and CA15-3 was 12.6 U/ml (Reference range: up to 35 U/ml). Ultrasound examination on 27th May 2017 revealed hypoechoic mass in left breast in 6-7 o' clock position measuring 54*40 mm containing cystic areas with the maximum diameter of 12 mm and micro lobulated rim. The right breast was unremarkable. Pathologic axillary lymph nodes were not present on both sides. Background of fibrocystic change on both breasts was noted. Digital mammography on the same day was done for the patient. Radiologist reported heterogeneously dense breasts [ACR (American College of Radiology) density type 3] and a few round to oval, benign-looking, densities in both breasts. On the left inner –lower quadrant a 5 cm mass with the irregular and micro lobulated margin was detected on mammography with a suggestion of malignancy as the first possibility. BI-RADS category was

4C and recommended pathologic examination. Three days later the patient was evaluated with Fine Needle Aspiration (FNA) which demonstrated hypercellular smear with many crowded ductal epithelial cell clusters characterized by cellular overlapping, large hyperchromatic nuclei, and conspicuous nucleoli. The result of FNA was malignant, in favor of "ductal carcinoma".

The patient underwent incomplete left mastectomy and lymph node dissection with breast reconstruction on 8th June 2017. The specimen was sent to the pathology department for frozen section and permanent diagnosis. The specimen consisted of skin and fatty tissue measuring 10*8*5 cm. The cut sections revealed gray-yellow hemorrhagic tumor lesion measuring 4.4*4*4 cm with pushing border. (Figure 1) The frozen section diagnosis was invasive carcinoma. In permanent, hematoxylin-eosin stain demonstrated highly atypical cells with lymphocytic infiltration and mainly pushing border but with infiltrative margin in few areas (Figure 2 & Figure 3). The permanent diagnosis was "invasive ductal carcinoma with medullary features and free surgical margins. Tumor greatest diameter was 4.4 cm. The nuclear grade was 3/3 and histologic grade was III/III. The vascular and perineural invasion was not seen. All five isolated lymph nodes were reactive".

**Figure 1.** Gross specimen of Invasive ductal carcinoma with medullary features

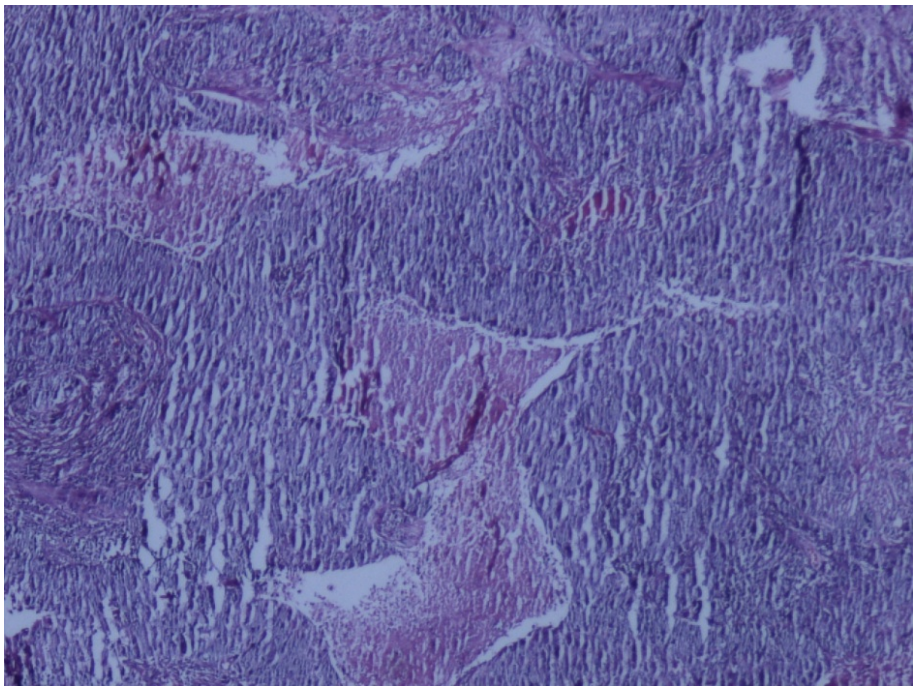

**Figure 2**. Invasive ductal carcinoma with medullary features, Hematoxylin-Eosin stain (x40)

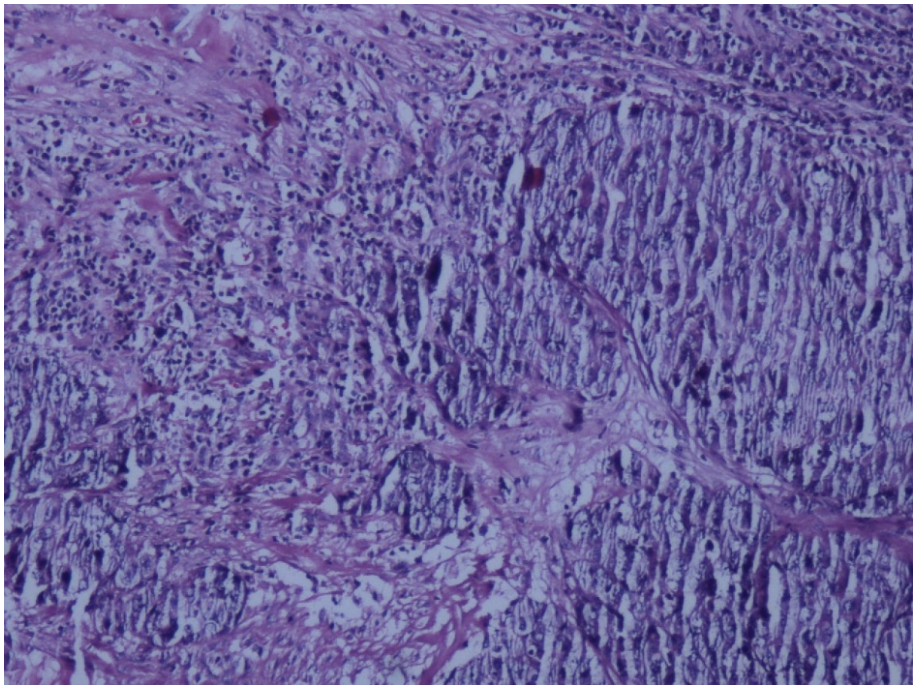

**Figure 3**. Invasive ductal carcinoma with medullary features, Hematoxylin-Eosin stain(x100)

## 3. Discussion

Strict histopathological criteria for MBC include well-circumscription of microscopic mass, syncytial growth pattern without tubular differentiation, highly atypical nuclear features, high mitotic index and dense lymphoplasmacytic infiltrate [1]. There is histopathological overlap between MBC and high-grade IDC [2]. Fine-needle aspiration cytology may suggest MBC, but histopathologic evaluation is needed for definitive diagnosis [3]. Involvement of axillary lymph nodes is not a feature Of MBC [1,2,3,6,7]. In ultrasound examination, MBC often shows a well-circumscribed hypoechoic mass, multilobulated appearance and intratumoral cystic areas that these can seem to be a benign lesion such as fibroadenoma or look likes phyllodes tumors [8]. FNA has the main role in the diagnosis of MBC in patients that physical examination and imaging suggest a benign mass. In histopathological specimen, MBC is composed of well-demarcated microscopic mass with pushing borders, a syncytial pattern, atypical nucleus, high nuclear grade and high mitotic activity with poorly differentiated cells that infiltrates with lymphoplasmacytic cells [1,2,4,5,6,9,10]. This pattern is seen in other cancers that affect the breast such as high-grade ductal carcinoma with medullary features, lymphoma (Hodgkin or non-Hodgkin), and metastasis to breast or intramammary lymph nodes [3]. It reveals that lymphocytes and plasma cells infiltration should not be diagnostic criteria of MBC and diagnosis of MBC has a significant proportion to IDC with medullary features that this overdiagnosis of MBC can result in under treatment of IDC with medullary features [5]. It means that the diagnosis of MBC s is very difficult and controversial between pathologists because of their low incidence and overlap of their characteristics with other carcinomas like IDC. It has been reported that MBC despite its histological pattern has a favorable prognosis than IDC with medullary features and it has the influence on treatment modalities. For example, if the diagnosis is pure medullary, it does not treat with chemotherapy and if the diagnosis is IDC with medullary features, oncologists give adjuvant or neo-adjuvant chemotherapy to patients. So we should reserve that term of MBC for cases that have strict and classic histopathological criteria [4]. In our case, a 35-year-old lady was admitted to the department of surgery with a benign-appearing mass in physical and ultrasound exam with no lymph node involvement. In the histological examination, it had features of MBC like large nuclei and highly atypical cells with lymphoplasmacytic infiltration that initially may be misdiagnosed as pure MBC, but because of the existence of ductal epithelial cell clusters and invasion, the diagnosis of ductal carcinoma with medullary features was confirmed and the patient went to appropriate treatment. In summary, it is not clear that MBC and ductal breast cancers with medullary features are distinct entities, they are very similar in histopathological features and can represent similar molecular and genetic profiles [11], but because of their differences in prognosis and treatment, it is important to have a definitive diagnosis and it needs to further research about different characteristics of both of them such as genetic profiles to help pathologists for definitive diagnosis and oncologists to appropriate treatment.

## 4. Conclusion

MBC is rare and is in the differential diagnosis of invasive ductal carcinoma with medullary features. Careful histopathological evaluation and considering strict criteria is necessary for definitive diagnosis and subsequent proper treatment.

## Acknowledgements

Mrs. Sholeh Akradi helped the authors in providing clinical history. Her cooperation was greatly appreciated.

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