Received: 4 July 2023 | Revised: 31 July 2023 | Accepted: 8 August 2023

DOI: 10.1002/ccr3.7844

CASE REPORT

Clinical Case Reports Open Access WILEY

# Invasive breast carcinoma of no special type with medullary pattern: A case report at a tertiary facility in Tanzania

**Alex Mremi**[1,2] | **Marianne Gnanamuttupulle**[2,3] | **Shilanaiman Hilary Ntundu**[3] | **Oliver Henke**[4,5] | **Kondo Chilonga**[2,3] | **David Msuya**[2,3]

[1]Department of Pathology, Kilimanjaro Christian Medical Centre, Moshi, Tanzania

[2]Faculty of Medicine, Kilimanjaro Christian Medical University College, Moshi, Tanzania

[3]Department of General Surgery, Kilimanjaro Christian Medical Centre, Moshi, Tanzania

[4]Cancer Care Canter, Kilimanjaro Christian Medical Centre, Moshi, Tanzania

[5]Section Global Health, Institute for Hygiene and Public Health, University Hospital Bonn, Bonn, Germany

**Correspondence**
Alex Mremi, Department of Pathology, Kilimanjaro Christian Medical Centre, 3010 Moshi, Tanzania.
Email: alex.mremi@kcmuco.ac.tz

**Key Clinical Message**

- Describes a rare form of invasive breast cancer of no special type.
- Not a distinct morphological subtype.
- Characterized by dense lymphoid infiltrate, syncytial growth, pushing borders, and cells with high-grade nuclei.
- Clinically aggressive but carries a better prognosis than other more frequent invasive breast carcinomas.

**Abstract**

Invasive breast carcinoma of no special type with medullary pattern (BCNST-MP) is a rare form of breast tumor, accounting for less than 5% of all invasive breast carcinomas. Its diagnosis is based on histologic criteria. Historically, this tumor was known as medullary carcinoma. Poor morphological reproducibility led to re-classification. Despite having an aggressive biological behavior, these tumors usually carry a better prognosis compared with other more frequent forms of invasive breast carcinomas. Herein, we present a case of BCNST-MP in a 58-year-old African female, successfully treated in our institution through chemo-radiation, hormonal therapy and surgery.

**KEYWORDS**

invasive breast carcinoma, medullary pattern, no special type

## 1 | INTRODUCTION

Invasive breast carcinoma of no special type with medullary pattern (BCNST-MP) is a rare breast tumor that accounts for <5% of all invasive breast carcinomas.[1] Diagnosis of this tumor usually is defined by histologic diagnostic criteria as proposed by Ridolfi et al.[2] Morphologically, this tumor displays dense lympho-plasmacytic infiltration, pushing borders, cells with high grade nuclei (2 or 3) as well as syncytial growth pattern.[2–4] The classification of breast tumors continues to evolve, with the integration of new knowledge from research rapidly being translated into clinical practice. Historically, BCNST-MP tumors were previously termed as medullary carcinoma; a specific and a distinct morphological subtype recognized by the World Health Organization (WHO) classification of Tumors.[1]

However, their diagnostic criteria are difficulty to apply; resulting into poor intra and inter-observer morphological reproducibility. Therefore, for clinical purposes, the current preferred term is invasive breast carcinoma of no special type with medullary pattern (BCNST-MP), and the terminology considers carcinomas with a medullary pattern as representing one end of the spectrum of the tumor infiltrating lymphocyte (TIL)-rich invasive breast carcinoma of no special type. It is no longer considered as a distinct morphological subtype.

Regardless of their high mitotic rate and the cytological anaplastic features; generally BCNST-MP tumors carry good prognosis which is attributed to their prominent TILs and the presence of B-cell/plasma cell.[1,2] Herein, we present a case of BCNST-MP in a 58-year-old African female, successfully treated in our institution through chemoradiation, hormonal therapy, and surgery. Three years post oncological treatment, the patient remains symptoms free without any evidence of recurrence or metastasis. A brief review of the literature is provided.

## 2 | CASE REPORT

In the year 2020, a 58-year-old African female, self-referred to the surgical outpatient department of our center with a chief complain of a non-tender left breast lump which was progressively increasing in size over the past 7 months. She denied history of difficulty in breathing, lower back pain, weight loss or any other constitutional symptoms. Her aunt was diagnosed with breast cancer at the age of 53 years. There was no history of trauma or contraceptive use. She had two pregnancies and both her children were breast fed for almost 2 years. Her first pregnancy was at the age of 24 years. She attained menarche and menopause at the age of 17 and 54 years, respectively. She was a community development officer by profession and was social drinker but never smoked cigarette. She was diabetic and hypertensive with good drug compliance for the past 10 years.

On local examination, a mass on her left breast over the left upper inner quadrant, measuring 12 × 10 cm in size was noted. The mass was non-tender, well circumscribed, and soft in consistency. It was not fixed to the skin or the chest wall. The overlying skin was normal. There was neither nipple discharge nor retraction. She had no palpable lymph nodes over her axillar or supra clavicular region. Her right breast was apparently normal. Both breast ultrasound and mammography of the left breast reported a well circumscribed tumor in favor of benign lesion. Thus, a clinical diagnosis of a benign breast neoplasm was entertained. The patient was scheduled for wide local excisional biopsy. The specimen (Figure 1) was submitted for

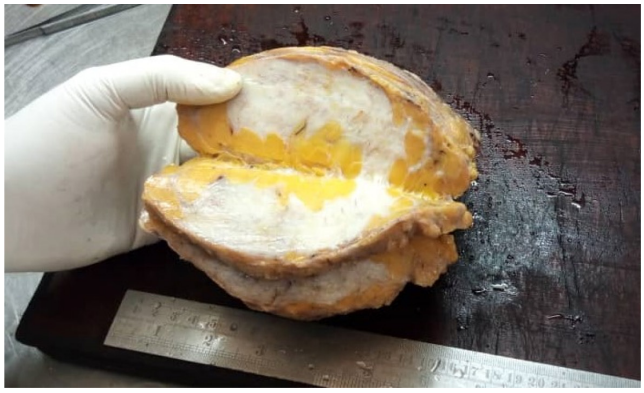

**FIGURE 1** Photograph of the lumpectomy BCNST-MP tumor demonstrating a well circumscribed nature.

histopathology analysis. Pathology report highlighted an invasive tumor with pushing boundaries, syncytial growth pattern composed of cells with high-grade nuclei. Tubule formation was absolutely lacking, instead characteristic marked lymphoplasmacytic response at its periphery was a feature (Figure 2). Surgical margins of the lumpectomy specimen were positive for the tumor. Hormonal receptors status determination results reported moderate immunopositivity of most of the tumor cells for ER and PR but negative for HER-2. The diagnosis of BCNST-MP was established.

The patient was scheduled for modified radical mastectomy with axillary clearance. Histopathology results of the mastectomy specimen reported breast carcinoma with morphology similar to the previous lumpectomy biopsy; $pT_3N_0M_0$. The skin, nipple, resected surgical margins, and lymph nodes were free from tumor deposits. She underwent eight cycles of adjuvant chemotherapy with adriamycin and carboplatin. Later, she received hormonal therapy with anastrozole and later switched to tamoxifen due to intolerable side effects. Also, the patient received 6 weeks of external beam irradiation for the optimal disease control. To date, 3 years of active surveillance post oncological treatment have passed; the patient remains symptoms free, without evidence of recurrence or metastasis.

## 3 | DISCUSSION

Infiltrating ductal carcinoma, no special type is the most frequent histologic subtype of breast cancer globally; however invasive tumors with medullary pattern are relatively uncommon. They account for about 1%–6% of all invasive breast cancers.[1] Despite having a higher degree of cellular atypia than infiltrating ductal carcinoma, BCNST-MP tumors have a better prognosis.[2] Several studies have concluded the incidence of these tumors is higher in younger women (under 40 years old), unlike it was the case in our

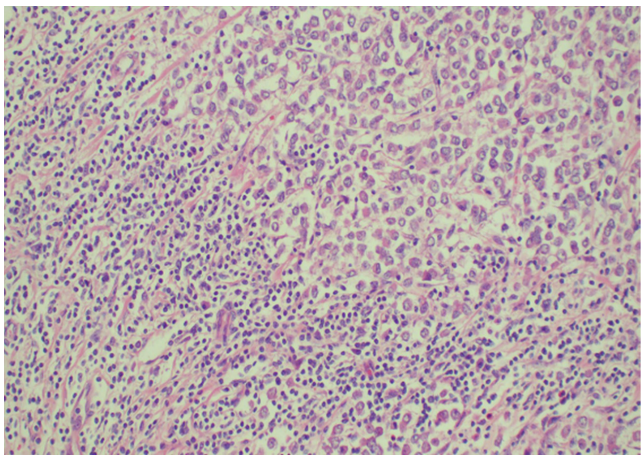

**FIGURE 2** Histopathology of the BCNST-MP highlighting sheets of cells with indistinct cell borders (syncytial growth); the individual cells are moderately to poorly differentiated; no prominent tubule formation and marked lymphoplasmacytic response at periphery; hematoxylin and eosin-stained 20× original magnification.

patient. As it was so in the index case, most patients with these tumors have a positive family history of breast cancer. Similarly, the patients' age range of late 50s to early 60s as evidenced in the index case.[2] The commonest clinical presentation is a palpable circumscribed swelling as it was mirrored in the index case. Typically, these tumors display a well circumscribed round shape with well-defined margins and a soft consistency. Mammographically, BCNST-MP is typically well circumscribed and may be confused with a benign lesion.[2] In most patients, these tumors are less than 5 cm in size.[3] However, huge tumor size, as it was the case in our patient are not uncommon possibly due to the delay in diagnosis.[2,3]

BCNST-MP tumors demonstrate peculiar histological features that are pathognomonic for them. These include heavy tumor TILs, pushing borders, and syncytial growth pattern as well as high grade nuclei.[4,5] Prominent TILs are believed to contribute to better prognosis in these tumors.[5–8] Contrary to the index case, majority of BCNST-MP tumors typically lack ER expression, however tumors that express ER and PR are not uncommon.[4] Diagnostic procedures for the BCNST-MP tumors are basically the same as for other forms of invasive breast carcinomas. These entail screening mammography, clinical breast examination, ultrasound, fine needle aspiration cytology, and core needle biopsy. Histopathology analysis is the mainstay for establishing definitive diagnosis.

Radiological imaging such as breast ultrasound and mammogram can be used to underline the malignant nature of the lesion, however, they are not reliable in distinguishing BCNST-MP from other invasive breast carcinomas.[5,6] Usually on mammography, these tumor appear to a lobulated, round, or oval mass while on ultrasonography; they are hypoechoic with a substantial echogenic halo. Management approaches for the BCNST-MP principally are similar to treatment options for other forms of invasive breast cancers of no special type. These involve considerations for targeted therapy depending on ER, PR, and HER-2 status.[4] Notably, the prominent lymphocytes that infiltrate these tumors do not change existing treatment regimes. Several studies have suggested that BCNST-MP have favorable prognosis than other high grade infiltrating duct carcinoma with a 5-year survival rate ranging between 70% and 92.3% and 10 year survival rate ranging from 63% to 94.9%.[7,8] Prognostic factors for these neoplasms are identical to other invasive breast carcinomas of no special type counterparts which include patient's age, tumor histological grade, TNM stage, lymphovascular invasion, hormonal receptors status, molecular subtype, etc.[9,10] Similarly, triple negative tumors have been associated with poor prognosis. The index case displayed ER and PR expression and possibly this may explain the good prognosis. Several multi-gene assays have been developed to predict recurrence risk in patients with ER positive breast cancer who are scheduled for endocrine therapy. The 21-gene assay is increasingly utilized, and its prognostic usefulness has been verified retrospectively, revealing significant variations in the probability of distant recurrence between high and low risk individuals.[11–13] Its significance in predicting chemotherapy benefit has also been proven, with a definite advantage for high-risk patients and a negligible benefit for low-risk individuals. Unfortunately, in our patient, a 21-gene expression assay was not considered because of financial implications as well as limited availability of genomics testing in our setting.

## 4 | CONCLUSION

BCNST-MP is uncommon form of invasive breast carcinoma. Essentially, it is not a distinct morphological subtype. Instead, it represents one end of the spectrum patterns of invasive breast cancers of no special type with abundant tumor infiltrating lymphocytes. Despite having an aggressive clinical biological behavior, these tumors are known to carry a better prognosis compared with other more frequent forms of invasive breast carcinoma.

### AUTHOR CONTRIBUTIONS

**Alex Mremi:** Conceptualization; data curation; investigation; writing – original draft; writing – review and editing. **Marianne Gnanamuttupulle:** Data curation; writing – original draft; writing – review and editing. **Shilanaiman Hilary Ntundu:** Data curation; writing – review and editing. **Oliver Henke:** Data curation; project

administration; supervision; writing – review and editing. **Kondo Chilonga:** Data curation; project administration; supervision; writing – review and editing. **David Msuya:** Data curation; project administration; supervision; writing – review and editing.

## ACKNOWLEDGMENTS

The authors wish to thank the patient for allowing us to use her medical information for academic purposes.

## FUNDING INFORMATION

The work did not receive funds from any source.

## CONFLICT OF INTEREST STATEMENT

All authors have declared that no competing interest exists.

## DATA AVAILABILITY STATEMENT

There is no data genererated from this study

## ETHICS STATEMENT

There was exemption of ethical clearance.

## CONSENT

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

## ORCID

*Alex Mremi* https://orcid.org/0000-0001-7226-0168

## REFERENCES

1. Tan PH, Ellis I, Allison K, et al. The 2019 World Health Organization classification of tumours of the breast. *Histopathology*. 2020;77(2):181-185. doi:10.1111/his.14091
2. Ridolfi RL, Rosen PP, Port A, Kinne D, Miké V. Medullary carcinoma of the breast: a clinicopathologic study with 10 year follow-up. *Cancer*. 1977;40(4):1365-1385. doi:10.1002/1097-0142(197710)40:4<1365::aid-cncr2820400402>3.0.co;2-n
3. Samir SM, Fayaz MS, Elbasmi A, et al. Medullary carcinoma of the breast: ten year clinical experience of the Kuwait cancer control Centre. *Gulf J Oncolog*. 2011;10:45-52.
4. Aksoy A, Odabas H, Kaya S, et al. Hormone receptor status and survival of medullary breast cancer patients. A Turkish Cohort. *Saudi Med J*. 2017;38(2):156-162. doi:10.15537/smj.2017.2.18055
5. Larribe M, Thomassin-Piana J, Jalaguier-Coudray A. Breast cancers with round lumps: correlations between imaging and anatomopathology. *Diagn Interv Imaging*. 2014;95(1):37-46. doi:10.1016/j.diii.2013.04.003
6. Vu-Nishino H, Tavassoli FA, Ahrens WA, Haffty BG. Clinicopathologic features and long-term outcome of patients with medullary breast carcinoma managed with breast-conserving therapy (BCT). *Int J Radiat Oncol Biol Phys*. 2005;62(4):1040-1047. doi:10.1016/j.ijrobp.2005.01.008
7. Reimer T. Management of rare histological types of breast tumours. *Breast Care (Basel)*. 2008;3(3):190-196. doi:10.1159/000136826
8. Kim J, Kim JY, Lee HB, et al. Characteristics and prognosis of 17 special histologic subtypes of invasive breast cancers according to World Health Organization classification: comparative analysis to invasive carcinoma of no special type. *Breast Cancer Res Treat*. 2020;184(2):527-542. doi:10.1007/s10549-020-05861-6
9. Pedersen L, Zedeler K, Holck S, Schiødt T, Mouridsen HT. Medullary carcinoma of the breast. Prevalence and prognostic importance of classical risk factors in breast cancer. *Eur J Cancer*. 1995;31A(13–14):2289-2295. doi:10.1016/0959-8049(95)00408-4
10. Rechsteiner A, Dietrich D, Varga Z. Prognostic relevance of mixed histological subtypes in invasive breast carcinoma: a retrospective analysis. *J Cancer Res Clin Oncol*. 2022;149:4967-4978. doi:10.1007/s00432-022-04443-x
11. Ethier JL, Amir E. The role of the 21-gene recurrence score in breast cancer treatment. *Mol Diagn Ther*. 2016;20(4):307-313. doi:10.1007/s40291-016-0209-0
12. Sparano JA, Gray RJ, Makower DF, et al. Adjuvant chemotherapy guided by a 21-gene expression assay in breast cancer. *N Engl J Med*. 2018;379(2):111-121. doi:10.1056/NEJMoa1804710
13. Geyer CE Jr, Tang G, Mamounas EP, et al. 21-gene assay as predictor of chemotherapy benefit in HER2-negative breast cancer. *NPJ Breast Cancer*. 2018;14(4):37. doi:10.1038/s41523-018-0090-6

**How to cite this article:** Mremi A, Gnanamuttupulle M, Ntundu SH, Henke O, Chilonga K, Msuya D. Invasive breast carcinoma of no special type with medullary pattern: A case report at a tertiary facility in Tanzania. *Clin Case Rep*. 2023;11:e7844. doi:10.1002/ccr3.7844