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Rare case of neuroendocrine tumor of breast: A case report

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Abstract
Introduction: Neuroendocrine carcinomas mainly affect the bronchopulmonary and the gastrointestinal systems. Primary neuroendocrine carcinomas of the breast are rare, with incidence under 0.1% from all the breast carcinomas and under 1% from all neuroendocrine carcinomas.
Case: We present a case of 85-year-old woman diagnosed with primary neuroendocrine carcinoma of breast. Patient primarily treated as benign breast lump pre-operatively and Simple Mastectomy was done. On histopathological examination patient diagnosed with primary neuroendocrine carcinoma of breast.
Discussion: Neuroendocrine breast carinoma is a rare type of breast cancer. Diagnosis made mainly on basis of histopathological examination and immuno histochemical markers. Due to its rarity and lack of randomized data, there is little evidence to guide the choice of treatment. Consequently, neuroendocrine carcinomas of the breast is currently treated as any invasive breast carcinoma not-otherwise specified. Surgery is the mainstay of the treatment for early neuroendocrine carcinomas of the breast.
Result: A rare case of Neuroendocrine breast carcinoma was diagnosed post-operatively on histopathological examination. Patient had underwent Simple Mastectomy as pre-operatively treated as benign breast lump and post-operative follow-up was uneventful.

Keywords: Neuroendocrine carcinoma, Breast carcinoma, neuroendocrine carcinomas of the breast, NET

Introduction
Neuroendocrine tumors (NETs) are neoplasms that arise from cells of the endocrine (hormonal) and nervous systems. They most commonly occur in the intestine, where they are often called carcinoid tumors, but they are also found in the pancreas, lung, and the rest of the body. Primary neuroendocrine carcinomas of the breast are rare, with incidence under 0.1% from all the breast carcinomas and under 1% from all neuroendocrine carcinomas [2, 3].
Breast cancers with NE differentiation are heterogeneous, comprising a broad spectrum that includes not only cancers morphologically similar to NE tumors (NET) of the lung and gastrointestinal tract (GI), but also infiltrating breast carcinomas, no special type (IBC-NST) and other special subtypes (solid papillary carcinomas (SPC) and mucinous carcinomas type B (MC type B), all of which show variable morphologic NE features and/or NE markers expression [3]. In HPE, morphologically, the tumors consist of densely cellular solid nests and trabeculae of tumor cells, which may be spindled, plasmacytoid, polygonal with eosinophilic and granular or clear cytoplasm separated by delicate fibrovascular stroma. The classic features of NET in lung/GI such as ribbons, cords and rosettes are not prominent NE features in breast; instead, papillary or insular patterns and alveolar like structures may be seen [3].

IHC markers
They show high ER/PR level and CK7 positivity, but HER2 negativity and low Ki67. Chromogranin A (CgA) and synaptophysin (Syn) are the most sensitive neuroendocrine markers, whereas neuron-specific enolase (NSE) and CD56 are less sensitive and less specific [4]. We present a case of Neuroendocrine tumor of breast in a 85-year-old female patient who was admitted in the department of general surgery in Smt. SMS Multispeciality Hospital, Ahmedabad.

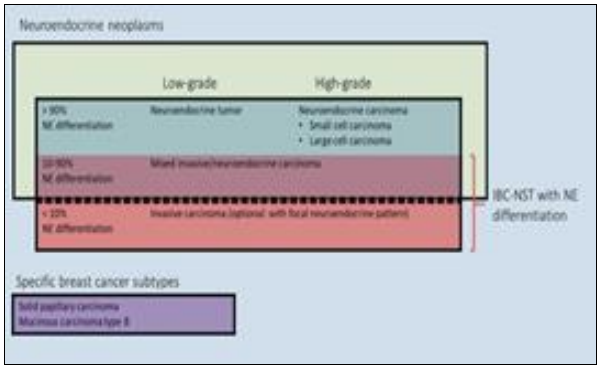

Fig 1: WHO classification (2019) of NE cancers. Breast neoplasm with predominant neuroendocrine differentiation were classified as neu-roendocrine neoplasm while those with less NE differentiation were labeled based on the non-NEN component.

Case Report

A 85 year female patient presented at surgical OPD of Smt. SMS Multispecialty Hospital with chief complaints of lump in left breast since 4 months with history of rapid growth in last 1 month and bloody discharge from nipple since 1.5 month. No c/o fever, nausea, vomiting, abdominal pain, backache, cough, hemoptysis, any swelling in neck or axilla , anorexia or weight loss .Patient had no any past medical history. Patient's operative history includes history of open hysterectomy 30 years back with history of 1 unit blood transfusion during hysterectomy. Patient's obstetric history includes G5P5A0L5 with all normal deliveries. There is no any family history of any breast cancer, ovarian cancer or uterine cancer in patient's maternal side of family. [patient's sister, mother, mother's sister, grandmother]

On examination, approx. 12*12*8 cm lump noted in upper inner quadrant, upper outer quadrant and retroareolar region of left breast. Lump appears firm in consistency, not fixed to skin or underlying muscle or chest wall. Nipple of left breast appears retracted and inverted and has bloody discharge. No any axillary lymph nodes palpable.

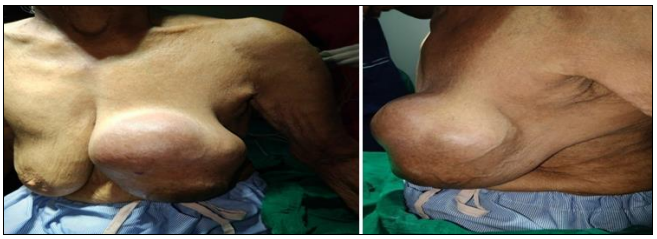

Fig 2: Clinical photographs showing left breast lump

Investigation

All blood investigations were within normal limits.

B/L breast sono-mammography

Approx. 131 x 122 mm sized large multi lobulated well defined cystic lesion is noted pre dominantly involving inner quadrant of left breast with no evident bilateral axillary lymphadenopathy suggesting possibility of malignant lesion likely (BIRADS 4C).

Pre-operative Fluid cytology

On gross examination, reddish turbid fluid aspirated. On microscopic examination, smears show scant cellularity consisting of inflammatory cells mainly polymorphsymphocytes and few macrophages over hemorrhagic background. Malignant cells are not seen.

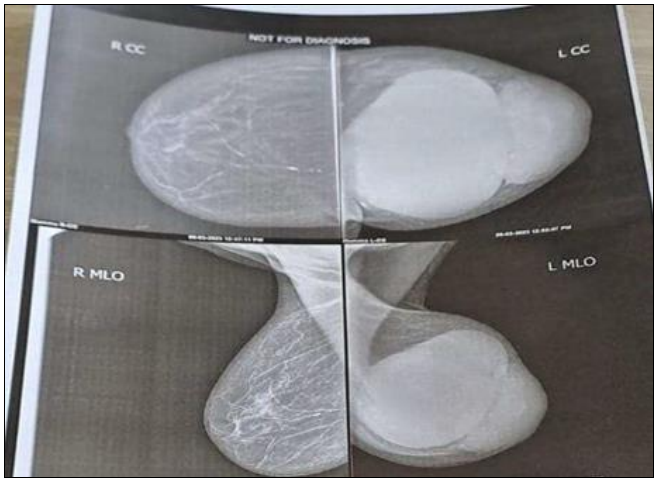

Fig 3: Bilateral breast sono-mammography showing large multiloculated well defined cystic lesion in left breast

Operative findings

Pre-operatively patient diagnosd as benign breast lump and was operated for Simple Mastectomy under General anaesthesia on 1st May, 2023. Intraopratively, whole breast lump with overlying skin is removed .On Aspiration, approx. 300ml reddish fluid aspirated which sent for fluid cytology. Breast lump is cut opened. On cut section, upper quadrant portion of breast lump appears as single cavity with smooth surface while retroareolar portion of lump shows nodular surface. Specimen is sent for HPE. Post-operative Fluid cytology shows only inflammatory cells. No malignant cells are seen.

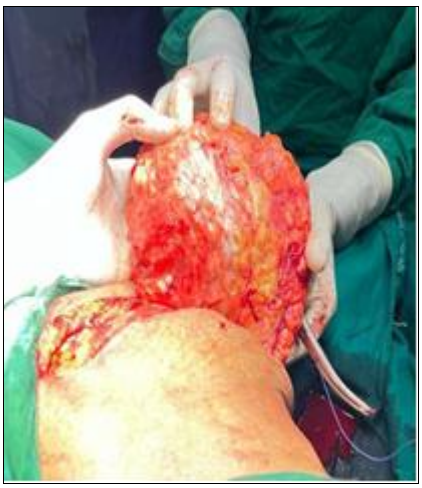

Fig 4: Intra-operative photo

Result

- Histopathology Report:
- Invasive Solid Papillary type of Neuroendocrine Tumor
- (Intermediate Grade)
- Nottingham's Score-6 (Grade II)
- Skin, all Surgical margins and base are free
- Pathological stage: T3NxMx

Since Neuroendocrine breast tumor was diagnosed post-operatively on histopathological examination and patient had underwent Simple Mastectomy patient was follow-up

post- operatively for development of neuroendocrine tumor of any other common sites like lungs or GIT. But post-operative follow-up was uneventful.

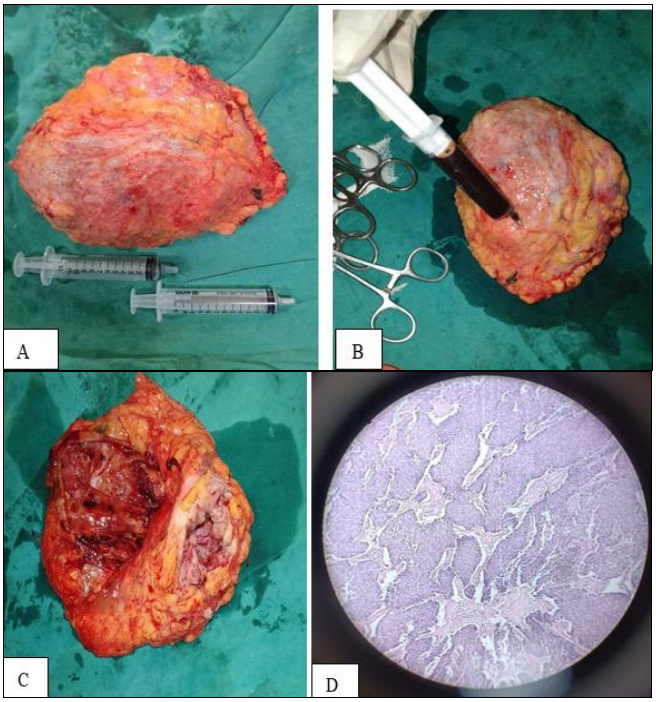

Fig 5: Specimen of breast lump (A) Whole specimen (B) Aspiration of fluid (C) Cut section of specimen (D) Microscopic view

Discussion & Conclusions

NEBC is a rare type of breast cancer. The recent classification of neuroendocrine neoplasms could be the basis for further improvement in the knowledge of these rare entities. Morphology was the primary basis of the classification and further genetic and pathology studies are indispensable for better characterizing these neoplasms and establish the clinical fallout from these aspects. Given the rarity of feedback, we do not have available literature data that direct us toward unambiguous therapeutic management and it is difficult to reach adequate conclusions on their best treatment strategy [5].

With the current small number of cases, it is unclear whether breast NETs should be managed following the guidelines of more common tumors. To date, there are no specific guidelines for their staging and treatment. It is recommended that they are treated similarly to other invasive breast carcinomas. Currently, this remains an intriguing area of research and an increasing understanding of the biology of these rare tumors is necessary to develop the most appropriate therapeutic strategy. We hope this overview may be an opportunity to stimulate further investigation [5].

Conflict of Interest

Not available

Financial Support

Not available

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