ISSN: 2581 – 3633
PubMed - National Library of Medicine - ID: 101745081

International Journal of Medical Science and Advanced Clinical Research (IJMACR)

Available Online at:www.ijmacr.com

Volume – 6, Issue – 4, August - 2023, Page No. : 65 - 68

Through the Lens of Cytology: Uniting Ductal Carcinoma and Neuroendocrine Differentiation

[1]Dr Sanjay Kumar, [2]Dr Anjali Ahalawat, [3]Dr Sant Prakash Kataria, [4]Dr Akanksha

[1-4]Pandit Bhagwat Dayal Sharma Post Graduate Institute of Medical Sciences, Rohtak.

Corresponding Author: Dr Anjali Ahalawat, Pandit Bhagwat Dayal Sharma Post Graduate Institute of Medical Sciences, Rohtak.

How to citation this article: Dr Sanjay Kumar, Dr Anjali Ahalawat, Dr Sant Prakash Kataria, Dr Akanksha, "Through the Lens of Cytology: Uniting Ductal Carcinoma and Neuroendocrine Differentiation", IJMACR- August - 2023, Volume – 6, Issue - 4, P. No. 65 – 68.

Type of Publication: Case Report

Conflicts of Interest: Nil

Abstract

Neuroendocrine differentiation in breast carcinoma has been reported in 2-5% cases, most commonly in sixth to seventh decade of life in female patients. It can be found in many breast histotypes, such as ductal, NOS, lobular, mucinous, tubular and papillary breast cancers. The breast neuroendocrine carcinomas were earlier known as argyrophilic breast carcinoma, endocrine carcinoma or breast carcinoid. But, presently these are classified as breast carcinoma with neuroendocrine differentiation or primary neuroendocrine breast carcinoma. However, clinically these are indistinguishable from other types of breast tumors. Here we describe a case of cytologically confirmed case of breast carcinoma with neuroendocrine differentiation. Diagnosis of breast carcinoma on fine needle aspiration cytology is not difficult but the neuroendocrine differentiation represents a challenge in breast cytology which needs to be confirmed by immunohistochemistry.

Keywords: NOS, Lobular, Mucinous.

Introduction

Breast carcinoma with neuroendocrine differentiation also known as neuroendocrine breast carcinoma includes a heterogenous group of rare tumors which accounts for 2-5% of all invasive breast carcinomas (1). The breast neuroendocrine carcinomas were earlier known as argyrophilic breast carcinoma, endocrine carcinoma or breast carcinoid. But, presently these are classified as breast carcinoma with neuroendocrine differentiation or primary neuroendocrine breast carcinoma. However, clinically these are indistinguishable from other types of breast tumors. Neuroendocrine differentiation has been reported in both in situ and infiltrating breast cancers. The prognostic significance of neuroendocrine differentiation in mammary carcinoma is unclear. These tumors are categorised into 3 groups by histochemistry / Immohistochemistry (IHC) Well differentiated neuroendocrine breast cancer (which included low and

intermediate grade tumors), Poorly differentiated neuroendocrine breast tumors/ small cell carcinoma, Neuroendocrine breast carcinoma determinants(2) . We report a case of a 65 year old female, who underwent fine needle aspiration for a lump in her breast and was diagnosed as ductal carcinoma breast with neuroendocrine differentiation based on cytological characteristics and specific immunohistochemical expression

Case Report

A 65 year old female presented in OPD with a firm, non tender right breast lump since 1 week associated with red color nipple discharge, fever and weight loss. General physical examination did not show any other abnormality. On ultrasonography, a hypoechoic lesion with nodular margins of size 3x2 cm is seen in right breast at 11 to 12 O' clock position suggested to be BIRADS III/IV lesion (probably benign or suspicious of malignancy).Fine needle aspiration cytology was performed from breast lesion revealing predominantly singly scattered cells with basophilic cytoplasm containing eosinophilic granules with eccentric nucleus, granular chromatin and inconspicuous nucleoli at places. Occasional mitotic figures and stromal fragments were also noted in hemorrhagic background. Cytological features were suggestive of ductal carcinoma with neuroendocrine differentiation. The diagnosis was subsequently confirmed by immunohistochemistry. On IHC these neuroendocrine cells show positivity for Neuron specific enolase (NSE) and chromogranin.

Discussion

Neuroendocrine differentiation in breast carcinoma has been reported in 2-5% cases, most commonly in sixth to seventh decade of life in female patients .It can be found in many breast histotypes, such as ductal, NOS, lobular , mucinous, tubular and papillary breast cancers. Such a differentiation has also been shown to be present in male breast carcinoma [3].The neuroendocrine tumours may represent either primary or metastatic lesions and the differentiation may be difficult even after microscopic examination. A component of ductal carcinoma in situ is the only absolute proof of the primary nature of breast carcinoma(4). Depending upon the cell types, grade and degree of differentiation, neuroendocrine carcinoma has been categorized in the following subtypes: solid neuroendocrine carcinoma, small cell/oat cell carcinoma and large cell neuroendocrine carcinoma. As per the present consensus, the expression of neuroendocrine markers should be positive in more than 50% of the cell population for the diagnosis of breast neuroendocrine carcinoma. Also, this expression should be positive for at least two of the following markers: chromogranin A, synaptophysin, CD56 (NCAM) and NSE(5).

Conclusion

Diagnosis of breast carcinoma on fine needle aspiration cytology is not difficult but the neuroendocrine differentiation represents a challenge in breast cytology which needs to be confirmed by immunohistochemistry. This subtype of ductal carcinoma has distinct cytological features rendering preoperative diagnosis possible. Recognition of this entity is important to avoid the misdiagnosis of neuroendocrine tumors metastatic to breast.

References

1. Lakhani SR, Ellis IO, Schnitt SJ, et al. WHO classification of tumours of the breast, vol. 4. 4th ed. Lyon: International Agency for Research on Cancer; 2012.
2. Ellis IO, Schnitt SJ, Sastre-Garau X. Invasive breast carcinoma. In: Tavassoli FA, Devilee P, editors.

World health organization classification of tumours. Pathology and genetics of the tumours of breast and female genital organs. Lyon: IARC press. 2003; 13-59.

3. Kataria SP, Kumar S, Sadhu S*, Singh G and Sen R.Primary Breast Neuroendocrine Carcinoma: Case Report of a Rare Entity. Austin J Clin Pathol. 2019; 6(1): 1059.
4. Bergholt T, Bruun E, Franzmann MB, Hvid-Jacobsen K, Henriksen FW. Carcinoid tumour of the breast. Eur J Surg Oncol. 1996; 22: 199-200.
5. Cai RX, Seng X. Clinical and pathological analysis of 13 cases of primary neuroendocrine carcinoma in breast. Tumour J World. 2008; 7: 268-27.

Legend Figures

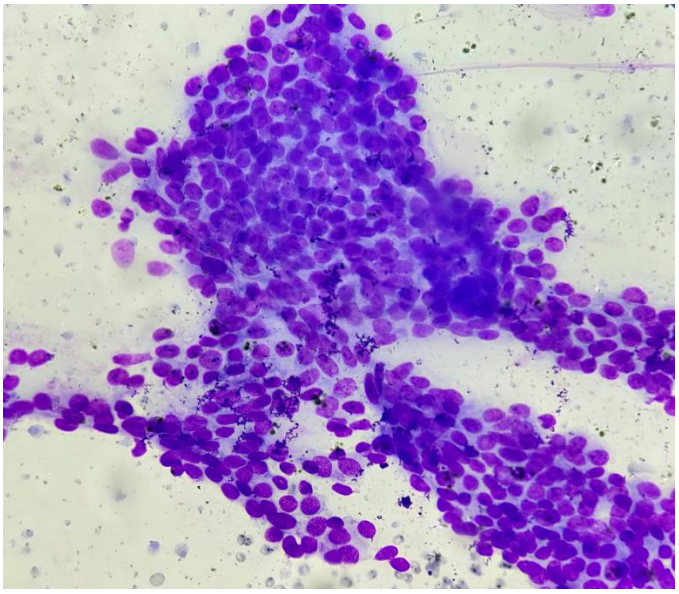

Figure1: At low power cells are seen in clusters as well as scateered singly having pale basophilic cytoplasm.

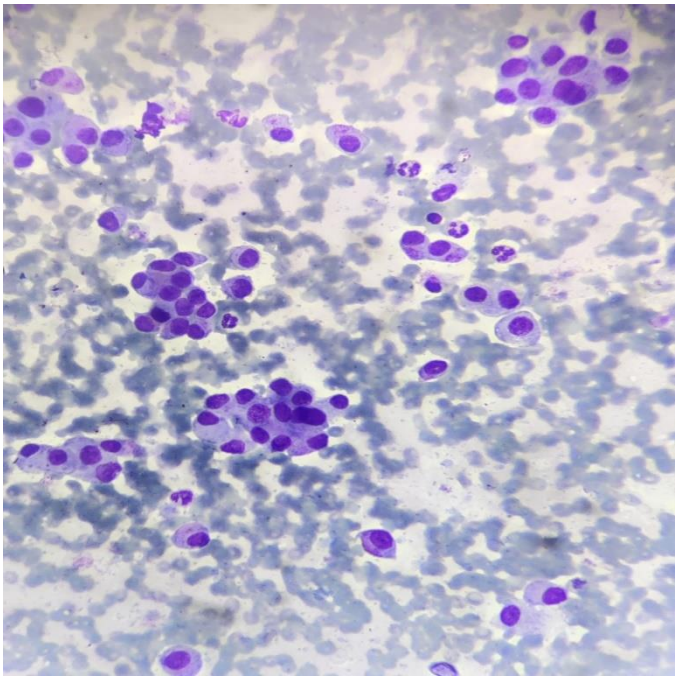

Figure 2: At high power cells are seen in clusters as well as scateered single having pale basophilic cytoplasm.

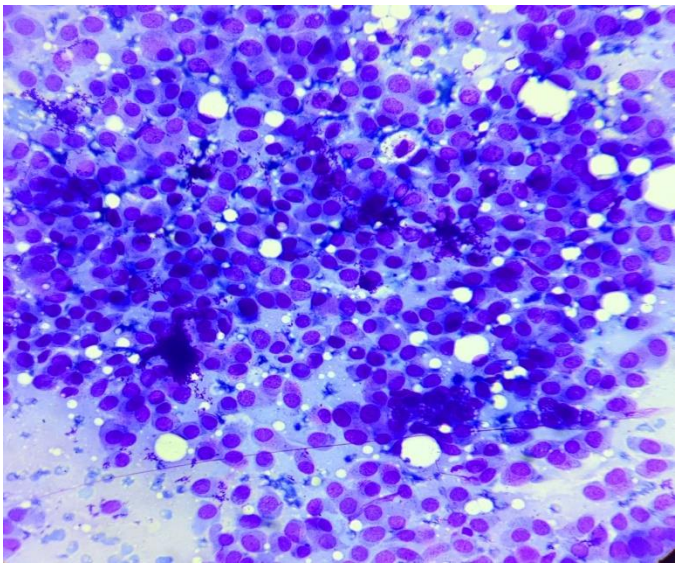

Figure 3: At high power: cells show pale basophilic cytoplasm, eccentric nucleus and azurophilic cytoplasmic granules.

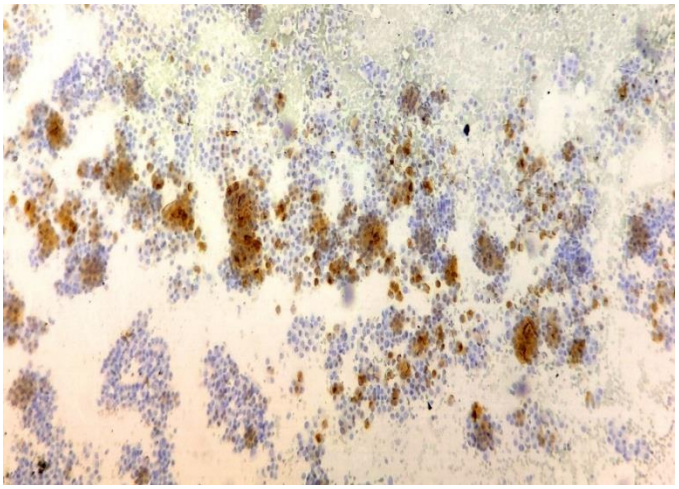

Figure 4: Immunohistochemistry for Chromogranin at low power show nuclear positivity.

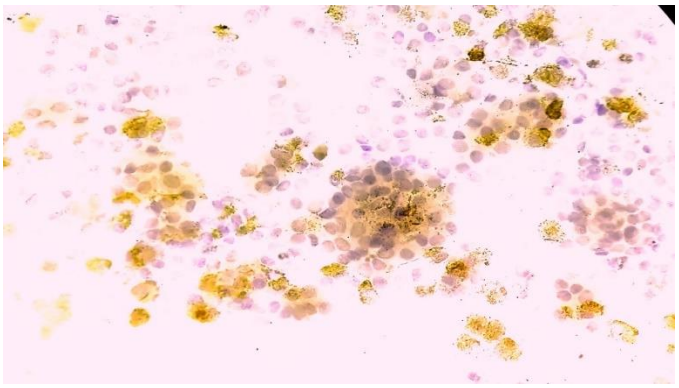

Figure 5: Immunohistochemistry for Chromogranin at high power show nuclear positivity.

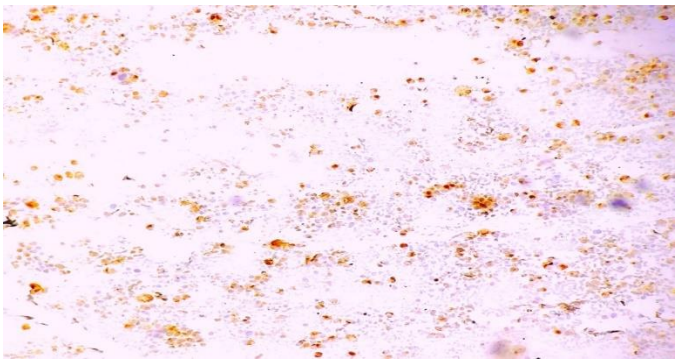

Figure 6: Immunohistochemistry for NSE at low power show nuclear positivity.

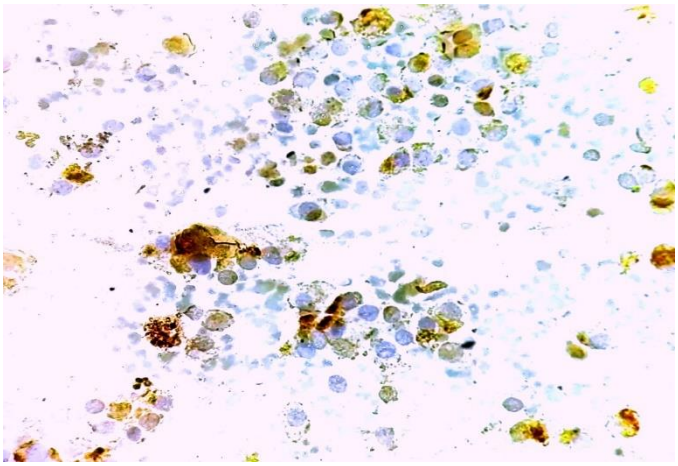

Figure 7: Immunohistochemistry for NSE at high power show nuclear positivity