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Invasive Carcinoma Of Breast With Apocrine Differentiation: A Case Report And Review Of Literature.

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ABSTRACT

Carcinoma with apocrine differentiation is an exceedingly rare subtype of invasive breast carcinoma, constituting only 0.4% of all breast carcinomas. We present a rare case of a 45-year-old female with a large left breast mass, pain, and extensive skin ulcerations. Diagnostic imaging and histopathological examinations led to the diagnosis of invasive apocrine carcinoma. Microscopically, tumor cells are large, with abundant eosinophilic granular cytoplasm and large pleomorphic vesicular nuclei with prominent nucleoli. On immunohistochemical study, it was negative for the Estrogen receptor (ER), Progesterone Receptor (PR) and Her 2 neu. It was positive for Gross Cystic Disease Protein Fluid -15 (GCDFP-15) and Androgen Receptor (AR). Only a few reported cases of Apocrine carcinoma of breast are reported in the literature, our knowledge regarding its clinical behavior, prognosis and response to therapy is restricted.
Keywords: Apocrine carcinoma, triple negative, androgen receptor.

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INTRODUCTION

Breast cancer is one of the major and leading sites of cancer among Indian females [1]. The most common type is invasive ductal carcinoma-Not otherwise specified (40-75%) [2]. Apocrine carcinoma of the breast is one of the rare subtypes constituting about 1% of all breast malignancies [3]. Clinical presentation and gross appearance are indistinguishable from classic Invasive Ductal Carcinoma (IDC) differing in their cytological appearance. Tumor cells are characterized by typical apocrine features of large cells with abundant eosinophilic granular cytoplasm and large vesicular nuclei [4]. It tends to show ER, PR and her-2 neu negativity and positive expression of AR and GCDFP-15[5]. Our case report sheds light on this uncommon subtype of breast carcinoma. We reported the case according to the recent CARE guidelines [6].

CASE REPORT

A 45-year-old female attended surgery outpatient department of our hospital with a 6-month history of a large left breast mass, and pain. On examination, there was a huge mass involving the whole of the breast with skin ulcerations [Figure1b]. X-ray-mammography revealed a significant opacity in the left breast (BI-RADS IV) [Figure 1a], with enlarged lymph nodes in the left axilla. CECT thorax confirmed a large, heterogeneously enhancing solid mass infiltrating the breast, skin, nipple, and multiple enlarged left axillary lymph nodes. Fine needle aspiration cytology (FNAC)was suggestive of ductal carcinoma of breast. The patient underwent modified radical mastectomy (MRM) and the specimen was sent to our department of pathology for histopathological examinations. Thorough grossing of the specimen was done according to College of American Pathologists (CAP) protocol. A large ulcerated area was seen over the skin. On cut section a growth was identified measuring 16 cm in maximum dimension. Total of 9 lymph were dissected. The growth was 0.5 cm away from deep resection margin [Figure1b].Routine tissue processing was done, hematoxylin and eosin slides were prepared and examined under the microscope. Microscopic examination showed Invasive Carcinoma with extensive apocrine differentiation [Figure 2] along with positive margins. All 9 lymph nodes were positive for tumor deposits. The tumor showed grade 3 features (Modified Bloom Richardson grading) and pathologic stage was $pT_4N_2M_X$.PAS stain of the section showed diffuse positivity [Figure 3a]. Immunohistochemistry showed ER [Figure 3c], PR [Figure 3d] and Her-2 neu were negative, while AR [Figure 3b] and GCDFP-15 were positive. The final diagnosis was given as invasive carcinoma with apocrine differentiation.

DISCUSSION

Apocrine carcinoma is a special subtype of breast cancer which has apocrine metaplasia, histologically, and the activation of the AR pathway, molecularly. As apocrine carcinoma is a very rare category of breast carcinoma, so research data of this entity is less commonly found in the literature. The definition and consequently the reported incidence of these tumors varies considerably, hence this entity is included under the group of “relatively rare carcinomas” [3]. The 2019 WHO classification of breast tumors recognized apocrine carcinoma as a distinct, special type of breast cancer (under the name "carcinoma with apocrine differentiation") [7]. It is characterized by a distinct apocrine morphology which must be present in >90% of cancer cells (=essential criteria). As desirable criteria, the WHO proposed a characteristic steroid receptor profile: ER-negative AR-positive. When strictly defined using the essential and desirable criteria, apocrine carcinoma is a rare breast malignancy, constituting ~1% of all breast cancers [8]. According, to WHO, the cells of apocrine carcinoma is usually of 2 types. Type A cells are characterized by enlarged nuclei with prominent nucleoli and abundant granular, eosinophilic cytoplasm, while Type B cells are characterized by abundant foamy cytoplasm [7]. Apocrine carcinoma should be differentiated from other types of breast carcinoma like oncocytic carcinoma, secretary type, lipid rich type, histiocytoid type. The standard treatment is still unknown due to scarcity of cases. Modified radical mastectomy is considered as the surgical treatment of choice. Y Tsutsuni et al [9] studied 440 cases of breast cancer out of which 429 cases were immunostained for ER, PR, Her2-neu and AR and gave a novel definition of apocrine type carcinoma as ER, PR negative AR positive breast cancer. Bedfort T et al [10] in 2014 reported a case of triple negative breast carcinoma with rare clinical presentation of metastasis. Therapies that inhibit androgen signalling pathway used in prostate cancer have also been studied in this type of cancer as other triple negative breast cancers [11]. Meattini *et al*. in 2018 [12] and Wenyu *et al*. in 2019 [13] concluded that overall survival was better in triple negative apocrine carcinomas with low Ki 67 index in comparison to non-apocrine triple negative cancers. So, we would like to conclude by saying that apocrine carcinoma of breast is a rare malignancy and very less literature is available.

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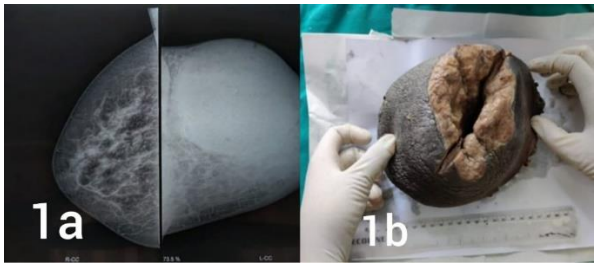

Figure 1a,Showing Mammogram (BIRADS 4)& 1b Showing Gross photograph of the case (Large ulcerative lesion involving the whole breast)

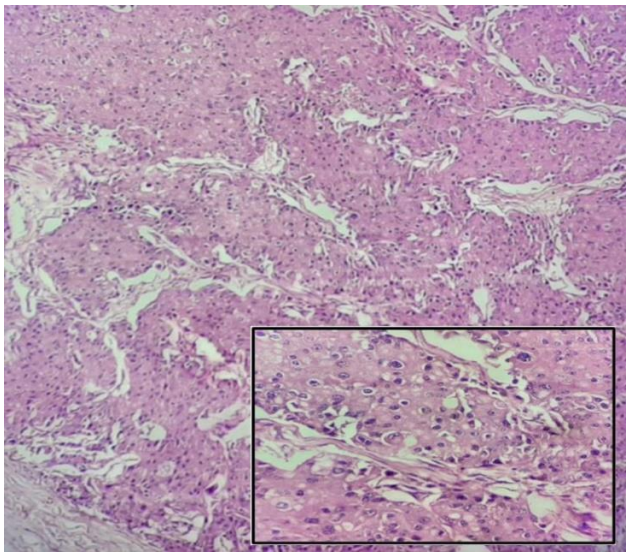

Figure 2: Showing extensive areas of apocrine differentiation in carcinoma breast(H&E,100X), Inset(H&E,400X)

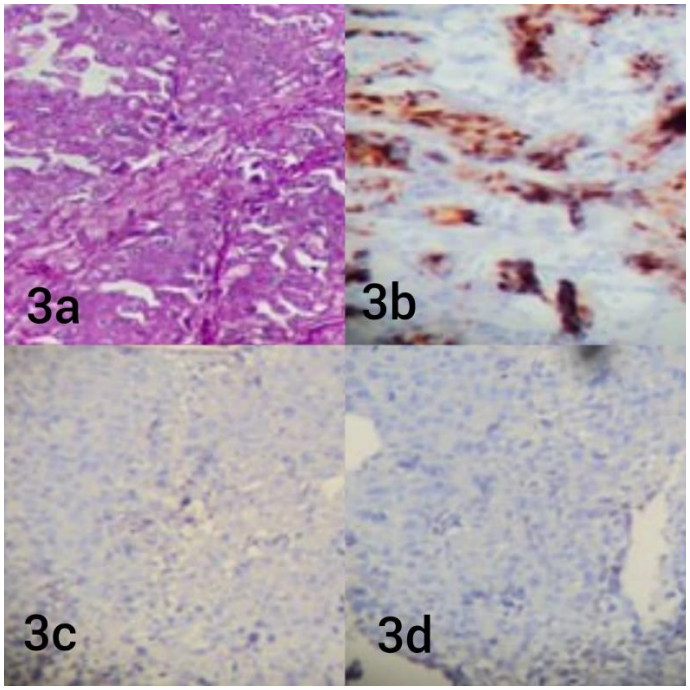

Figure 3a, Showing diffuse positivity (PAS stain,400x),3b (AR Positive,400x),3c(ER Negaive,400x)&3d (PR Negative,400x)

CONCLUSION

Apocrine carcinoma/Invasive carcinoma with apocrine differentiation is a rare and distinct morphological type of invasive breast cancer. Though morphologically it has the same clinical behavior as that of IC-NST(IDC-NOS), it should be reported as a separate distinct entity due to its unique hormonal expression profile (ER, PR: Negative and AR: Positive). This entity show unique response to androgen therapy.

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REFERENCES

[1] Sathishkumar K, Chaturvedi M, Das P, Stephen S, Mathur P. Cancer incidence estimates for 2022 & projection for 2025: Result from National Cancer Registry Programme, India. Indian J Med Res. 2022;156(4&5):598-607.
[2] Scholl AR, Flanagan MB. Educational Case: Invasive Ductal Carcinoma of the Breast. Acad Pathol 2020; 7:2374289519897390.
[3] https://www.pathologyoutlines.com/topic/breastmalignantapocrine.html.
[4] Vranic S, Feldman R, Gatalica Z. Apocrine carcinoma of the breast: A brief update on the molecular features and targetable biomarkers. Bosn J Basic Med Sci 2017;17(1):9-11.
[5] Hu T, Liu Y, Wu J, et al. Triple-Negative Apocrine Breast Carcinoma Has Better Prognosis despite Poor Response to Neoadjuvant Chemotherapy. J Clin Med 2022;11(6):1607.
[6] Riley DS, Barber MS, Kienle GS, et al. CARE guidelines for case reports: explanation and elaboration document. J Clin Epidemiol 2017; 89:218-235.
[7] 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.
[8] Provenzano E GZ Vranic S. Carcinoma with apocrine differentiation.5th ed. WHO Classification of Tumours: Breast Tumours. 2. IARC, Lyon 2019
[9] Tsutsumi Y. Apocrine carcinoma as triple-negative breast cancer: novel definition of apocrine-type carcinoma as estrogen/progesterone receptor-negative and androgen receptor-positive invasive ductal carcinoma. Jpn J Clin Oncol 2012;42(5):375-386.
[10] Bedford T, Alperstein A, Nathani Y, Marx R, DeVito P. A rare presentation of triple-negative apocrine breast carcinoma with metastases. J Surg Case Rep 2014;2014(5).
[11] Mills AM, E Gottlieb C, M Wendroth S, M Brenin C, Atkins KA. Pure Apocrine Carcinomas Represent a Clinicopathologically Distinct Androgen Receptor-Positive Subset of Triple-Negative Breast Cancers. Am J Surg Pathol 2016;40(8):1109-1116.
[12] Meattini I, Pezzulla D, Saieva C, et al. Triple Negative Apocrine Carcinomas as a Distinct Subtype of Triple Negative Breast Cancer: A Case-control Study. Clin Breast Cancer 2018;18(5):e773-e780.
[13] Wu W, Wu M, Peng G, Shi D, Zhang J. Prognosis in triple-negative apocrine carcinomas of the breast: A population-based study. Cancer Med 2019;8(18):7523-7531.