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Original Research Paper

Pathology

TUBULAR CARCINOMA OF BREAST- AN INVASIVE BREAST CANCER WITH EXCELLENT PROGNOSIS

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ABSTRACT

The most commonly diagnosed cancer and the leading cause of cancer mortality in women worldwide is carcinoma breast. They are broadly classified into invasive breast carcinoma- no specific type and special types; among which is tubular carcinoma (TC) which we encountered. A 66 year old post- menopausal female presented with swelling in the right breast which on mammography and cytology was diagnosed as malignancy. A modified radical mastectomy (MRM) was done. Histopathology revealed an infiltrating carcinoma with predominantly tubular differentiation (>90%) leading to the diagnosis of pure TC breast. Immunohistochemistry showed strong positivity for oestrogen receptors(ER), progesterone receptors (PR) and negativity for Her 2 typically seen in TC. The patient was started on tamoxifen therapy post diagnosis and was doing well but was subsequently lost to follow-up. The early detectability and diagnosis on mammography, characteristic histopathological findings and excellent prognosis makes the diagnosis of these malignancies of prime importance.

KEYWORDS : Invasive carcinoma breast, tubular carcinoma.

INTRODUCTION:

Carcinoma breast accounts for one-quarter of cancers in females worldwide and 27% cancers in developed countries [1]. A woman has 12.4% risk of developing carcinoma breast [2]. It comprises a group of neoplasms with varied morphology, behaviour, and response to therapy [3].They originate from any cell of mammary gland, exhibit variety of morphological and immunohistochemical features, with unique histopatholo gical subtypes, each having a specific course and outcome [4]. Among the various subtypes is Tubular Carcinoma (TC), a histologic subtype, with favourable prognosis. TC is increasingly encountered recently due to widespread use and advances in mammographic screening. It is managed by adequate local surgical excision [3]. Taking all these factors into consideration, we are presenting a case of TC breast.

CASE REPORT:

A 66 year old post- menopausal female apparently alright 6 months back noticed a swelling in the right breast which gradually increased in size and was not associated with pain, nipple retraction or any significant complaint. There was no significant family history.

On clinical examination, a 4x3 cm firm lump was present in the upper outer quadrant (UOQ) of the right breast, immobile; overlying skin and nipple areola complex (NAC) were normal. Contralateral breast and both axillae were unremarkable. Mammogram showed a 14x14x11 mm well defined hypoechoic lesion showing spiculation and lobulated irregular margin consistent with BIRADS 5 lesion. Fine needle aspiration cytology done was suggestive of ductal carcinoma. The patient underwent a right modified radical mastectomy (MRM).

Specimen-

Gross Examination: Specimen of right MRM measured 19x13x4 cm. Overlying skin and NAC were unremarkable. On bread loafing, tumour was located in the UOQ measuring 2.5x2x2 cm, well circumscribed, grey white, firm to hard, with no evidence of necrosis or haemorrhage.

Histopathological Examination: Showed an infiltrating carcinoma with predominantly tubular differentiation (>90%). These tubules were lined by a single layer of monomorphic tumour cells with patent lumen and round to angulated edges (Figure1a). Intervening stroma was thin, delicate, with minimal lympho-plasmacytic infiltrate. There was no evidence of necrosis, in situ carcinoma or lymho vascular emboli. All resection margins including skin, NAC and base were free of tumour. All 12 lymph nodes dissected were free of tumour. Immunohistochemistry (IHC) showed ER positivity (Figure1b), PR positivity (Figure2a) and HER2 receptor negativity (Figure2b). Thus a final diagnosis of Invasive Pure Tubular Carcinoma was made.

Follow Up- The patient after histopathological diagnosis was started on hormonal therapy in the form of tamoxifen. She was doing well but was lost to follow-up.

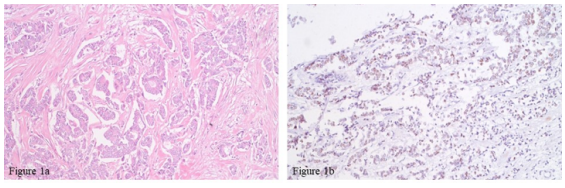

Figure1- 1a) Tubules lined by a single layer of monomorphic tumour cells with patent lumen and round to angulated edges (H & E, 100x). 1b) Oestrogen receptor positivity- nuclear stain (IHC, 100x).

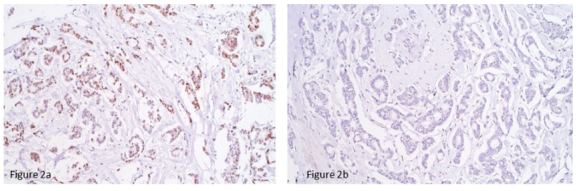

Figure2- 2a) Progesterone receptor positivity- nuclear stain (IHC, 100x). 2b) Her 2 receptor negativity- membrane stain (IHC, 100x).

DISCUSSION:

Breast carcinomas are classified primarily by their histological appearance [4]. Among its subtypes is TC which accounts for around 1% to 5% of invasive breast carcinomas [3]. Molecular and genetic studies have shown TC to be associated with a low frequency of genetic alterations. There is relatively higher frequency of loss of 16q, gain of 1q and lower frequency of 17p loss. These genetic alterations are also

commonly found in most low-grade, luminal-type breast carcinomas[5]. The average age of presentation is 50- 60 years, which is lower than in our case and is almost exclusively seen in females [6,7,8]. It is relatively small at the time of diagnosis, average tumour diameter being 1cm and hence does not mostly present clinically [7,8]. This is unlike our case where the tumour size was much greater at 2.5 cm and presented clinically as a breast lump making it an uncommon presentation. Most of these tumors being typically small are difficult to detect clinically but on mammography majority are detected, even better than conventional infiltrative duct carcinomas making screening mammography very important for these lesions [3,9,10]. But diagnosis of TC is strictly histologic [10].There are two subtypes based on the percentage of tubular component. Pure TC is composed of >90% tubules while mixed TC has a tubular component of > 75% [3,7,11]. There are three main histologic characteristics of TC- 1.) Well-differentiated tubules arranged in a stellate infiltrating configuration, 2.) Bland tumour cells with monomorphic nuclei, 3.) Absence of myoepithelial cells on haematoxylin-eosin and immunohistochemical staining [12]. All these were seen in the present case. Immunohistochemistry show positivity for ER and PR and negativity for HER2; as was in our case and also in studies by Yejin Min et al, W Boyan Jr et al, Gene-Fu Liu et al and others indicating the excellent response TC has to hormonal therapy [6,7,10]. Today molecular classifications are used along with morphological classifications for better prediction of tumour behaviour and to improve therapeutic strategies [13]. Among these categories is Luminal A type to which TC belongs. This type is believed to have the best prognosis [14]. As tumour size is considered the main risk factor for axillary lymph nodal metastasis of breast cancer, TC with an average size of only 1 cm is associated with a low risk of lymph node involvement [15]. It has also been observed that TC has a low rate of recurrence and an overall high survival rate [3]. All these factors contribute to its excellent prognosis. Because of its well differentiation TC can be confused with other benign entities like sclerosing adenosis, radial scar and microglandular adenosis. Absence of myoepithelial cells is the main distinguishing factor between TC and these entities [9]. The current treatment guidelines for TC include surgical resection in the form of lumpectomy or MRM and axillary staging, followed by whole breast radiation or hormonal therapy [6].

CONCLUSION:

TC breast is a special type of invasive carcinoma identified using strict histopathological criteria. It can be detected early and accurately using screening mammography and can be managed by adequate local surgical excision. It has a low rate of distant metastasis and mortality; making its early detection, identification and treatment very important.

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