Breast carcinoma in men is rare and intra-cystic papillary carcinoma of male breast is an extremely rare entity. Papillary lesions of male breast comprise of the spectrum of lesions ranging from benign intraductal papilloma to intraductal papillary carcinoma and invasive papillary carcinoma. It occurs most commonly in the seventh decade of life and accounts for <1% of all breast malignancies. The present case report is of a comparatively younger, 37 years old male who presented with a mass on lower quadrant (retro-areolar region) of the left breast.

**Keywords:** Male breast, Papillary lesions, Intra-cystic papillary carcinoma, Invasive papillary carcinoma
Introduction

Breast masses include benign as well as malignant lesions and occur less frequently in male as compared to female. Malignant neoplasms account for 0.6% of all breast carcinomas and less than 1% of all malignant lesions in men [1-2]. Papillary lesions are far more uncommon in men than women. The exact aetiology of male breast cancer is unknown. However, gynecomastia, imbalance in oestrogen-testosterone ratio, radiation exposure, obesity, BRCA2 mutations have all been implicated as risk factors [3-6]. It has been observed that intra-cystic papillary carcinoma (IPC) in particular may present more often in men with gynecomastia [7,8]. IPC is rare in male breast cancer, reported comprising 2.6-5% of male breast cancers [9,10]. Here, the present study reports a case of intra-cystic papillary carcinoma of the breast in a 37 years old male patient.

Case Report

A 37-year-old male presented with a mass (lump) over the retro-areolar region of left breast which according to the patient was of small size initially but rapidly increased in size within 15-20 days. On examination, the mass was of variegated consistency i.e., soft to cystic at one place and hard in consistency at another. Also, it was non-tender and free from underlying structures with no nipple retraction. However, the bloody discharge was present (Figure 1).

Cytology of the lesion revealed that the lesion was suspicious of malignancy (grade c4). Mammography of the lesion revealed a large solid cystic mass lesion with predominant solid component measuring approximately 7.1 x 6.2 cm in size. This mass showed significant internal vascularity, with suspicion of involvement of underlying musculature. No lymph node involvement was seen. The lesion was highly suspicious of neoplastic aetiology. Histopathological examination and CECT were advised for confirmation of the same.

A core biopsy of the lesion was done which revealed tumour cells arranged in multi-layered papillae with foci of the cribriform and solid pattern. Mitotic figures were also noted (Figure 2a-2e).

Fig-1: Clinical appearance of the lesion.

Fig-2a: H and E (4x).

Fig-2b: H and E (10x).
Figure 2a-2e: Tumour cells arranged in multi-layered papillae with foci of the cribriform and solid pattern. Mitotic figures are also noted.

IHC: The immunohistochemistry of the same tissue block was done for confirmation and further evaluation of the tumour.

It showed the strong positive intensity of staining for ER (EP-1) receptors as well as PR (EP-2) receptors with nearly 80% of cells nuclear staining in the invasive component of the tumour.

However, Her-2/neu (EP-3) was negative whereas P-63 showed non-specific staining (Figure 3-6).
The most common clinical finding in 75-90% of the patients is a painless mass, which is centrally located in 70-90% of the cases. IPCs can be asymptomatic or present with a palpable breast lump or bloody nipple discharge. Preoperative diagnosis of IPC can be difficult and definitive diagnosis is usually made after excisional biopsy [10].

IPC is usually located in the retro-areolar or the central area. It arises in the larger, more centrally placed ducts, and the tumour development and its secretion cause the cystic dilatation [4]. Ultrasonography of the IPC lesion typically reveals a hypo-echoic area (which represents the cyst) with soft tissue echoes projecting from the wall of the cyst (intra-cystic tumour).

The aetiology of male breast cancer remains poorly understood, but an imbalance in the oestrogen-testosterone ratio has been implicated [5]. The other etiological factors include obesity, cirrhosis, radiation exposure, drugs, head trauma (by increasing the prolactin production), local chest trauma, and smoking [1-3].

Increased risk has been seen in patients with an undescended testis, congenital inguinal hernia, orchidectomy, orchitis, testicular injury and infertility. BRCA1 and BRCA2 can cause breast cancer in females, but only a BRCA2 mutation can confer a significant risk in men [1]. Tsuda et al reported that a loss of heterozygosity on chromosome 16q was a useful marker for IPC since intraductal papilloma showed no loss of heterozygosity [11].

The papillary lesions in the breast include benign papilloma, the papillary variants of Ductal Carcinoma in Situ (DCIS), and invasive papillary carcinoma and comprises of a wide spectrum in terms of their clinical presentation, behaviour, morphologic features and malignant potential. IPC can be present as a pure form or associated with ductal carcinoma in situ or ductal carcinoma invasive around the tumour [3,9].

Recent studies have suggested that IPC should be considered as a low-risk invasive carcinoma [12]. Kraus and Neubecker established criteria to distinguish the benign papilloma from the papillary carcinomas [7]. Subsequently, the papillary carcinomas can be divided into invasive and non-invasive types. The further subdivision of papillary carcinomas into 2 types was made by Carter et al [8].
IPCs do not appear to have a basal myoepithelial cell (MEC) layer, and MEC markers, such as p63, actin, and calponin can be useful in differentiating between IPCs from papilloma [15,16]. Hill et al. suggested a spectrum of progression from an in-situ disease to an invasive disease by using myoepithelial cell staining which is considered as “gold standard” method, as it has relatively high sensitivity and denotes the invasiveness of the tumour cells in malignant papillary breast lesions [7,9]. Lobular carcinoma is much less common in men than in women and it represents only 1% of all the cases [4]. The rarer subtypes such as the medullary, tubular, mucinous and the squamous carcinomas have all been reported in men. The tumours with high nuclear grades, histologic grades and large surface areas are more likely to metastasize to the lymph nodes or to recur locally [6,7]. The frequency of lymph node involvement, local recurrence and distant recurrence is 0% to 11%, 3% to 70% and 0% to 4% respectively [11-13].

The carcinomas of the male breast have higher rates of oestrogen and progesterone receptor positivity than are found in women, but similar percentages may be expressed for Her-2 and p53 in men and women [1]. Our case was Her-2 negative. The standard treatment of IPC should be based on the associated pathology [10]. There are no definite guidelines for the treatment of IPC, however, a radical surgical excision with a clear resection of margin is the important mainstay of the treatment.

Mastectomy is usually unessential unless it is required because IPC has an excellent prognosis, a low local recurrence, and a rare distant metastasis [9]. Long-term follow-up is necessary after the surgical treatment. Clinical assessment, however, could not be done in our case as the patient absconded after the first cycle of chemotherapy. There has been no clear indication for adjuvant endocrine therapy, even among the patients with oestrogen receptor-positive tumours [17]. Lefkowitz et al reported a 10-year disease-free survival rate of 91% [14].

**Conclusion**

To conclude, invasive papillary breast carcinoma of males is an uncommon disease with a peak incidence in the seventh decade of life, however, it is extremely rare in comparatively younger patients of the third to the fourth decade.

A triple assessment, i.e., clinical examination, radiological investigation and histological assessment with a high level of clinical suspicion is necessary to diagnose IPC in men due to its rarity. Risk factors for male breast cancer include genetic and hormonal abnormalities. Furthermore, genetic testing and risk-reducing mastectomy should also be considered in cases with a strong family history for male breast cancer. The use of adjuvant therapy with hormonal therapy and radiotherapy remains unclear. Because of its good prognostic value, it is essential to diagnose the disease meticulously at an early stage.

**Reference**


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