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Spectrum of Disease in the Male Breast: 2 Year Study in a Tertiary Care Hospital

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Abstract: ***Male breast disease comprise a wide spectrum of benign and malignant processes. We present the spectrum of diseases encountered at our institution over the past 2 years (Jan 2017-December 2018) and describe their histopathological appearances. There are variety of lesions are observed during the study period, including both nonneoplastic and neoplastic. Male breast malignancy though rare must be considered. The most frequently encountered pathological characteristic is invasive and the predominant histologic subtypes are infiltrating ductal carcinoma.***

Keywords: Male breast, Benign, Malignant, Apocrine

1. Introduction

Male breast disease is often under recognized owing in part to its rarity and also to a lack of awareness. Although male breast disease is most often benign, cancer of the vestigial male breast does occur. Currently breast cancer is one of the most infrequent cancer types in men and comprises <1% of all male cancers and 0.65% of all breast cancers[1]. Prognostic factors and current treatment regimens have been extrapolated from female breast cancer. No current guidelines exist regarding screening of men at any age. Thus almost all male patients present with a clinical symptom such as breast pain or palpable mass.[1]

The American Cancer Society had estimates that 1450 men would be diagnosed with breast cancer in the United States and 470 would die from this disease in the year 2004.[2] Incidence of Male Breast Cancer (MBC) increased significantly from 0.86 to 1.06 per 100,000 population over the last 26 years.[3] Worldwide variation of MBC resembles that of breast cancer in women, with higher rates in North America and Europe and lower rates in Asia. Although epidemiologic literature on female breast cancer is extensive, little is known about the etiology of MBC. This difference is mostly due to the rarity of this disease in men, which greatly limit the application of epidemiologic methodology to studies of MBC. Due to rarity of cancer sample size is often too small to observe an association between the risk factor and breast cancer. Tissue availability presents another challenge. Most breast tumors in men are small, leaving little tissue for research purposes after the requisite pathology workup for molecular and genetic studies.[4]

In this article, we describe and characterize a series of both benign and malignant male breast disease processes encountered at our institution over the 2 years (2017-2018) by histopathological examination.

2. Material and Methods

A retrospective analysis of male breast tissues submitted for histopathology between 1st January 2017 to 31st December 2018 was done. Age, sex, clinical and histomorphological features were recorded from the histological records.

3. Observation

Table 1: Spectrum of lesions - 25

Lesion	Number
Gynaecomastia	04
Cystic Lesion	03
Inflammatory	02
Benign	03
Malignant	13
Total	25

Table 2: Age wise distribution of various lesions

Disease\Age	11-20	21-30	31-40	41-50	51-60	61-70	>70
Gynaecomastia	-	3	-	-	-	-	1
Cyst	1	-	1	1	-	-	-
Inflammatory lesion	-	1	-	-	1	-	-
Benign	1	-	1	1	-	-	-
Malignant	1	1	1	2	2	2	3
Total	25						

Malignancy is more in age group more than 70yrs

Table 3: Distribution of Non neoplastic lesion Total 09

Disease	Number
Gynaecomastia	04
Cyst	03
Inflammatory Lesion	02

Table 4: Distribution of Benign lesions - 03

Disease	Number
Fibroadenoma	02
Phyllodes Tumour	01

Table 5: Distribution of Malignant lesions- 13

Lesion	Number
Infiltrating Ductal Carcinoma of Breast	09
Apocrine carcinoma	01
Mucinous carcinoma	01
Squamous Cell Carcinoma	01
Sarcoma	01

4. Discussion

The diseases and conditions affecting male breast can be categorized on the basis of neoplastic and non-neoplastic lesion. Non neoplastic lesions are further categorized according to tissue of origin. Those arising from skin and subcutaneous tissues, those arising from stroma and glandular elements, and those arising from miscellaneous structures.

Skin and subcutaneous tissues
Men can also develop dermal lesions such as epidermal inclusion cysts or sebaceous cysts. Epidermal inclusion cysts and sebaceous cyst typically present as intradermal or partially dermal lesions in the subcutaneous tissue. They are usually round, circumscribed and typically range in size from 1 to 5 cm. The cyst contain laminated keratin with a wall of epidermis. [5]
In present study 3 cases of cysts were found which comprises 12% of total cases studied.

Stromal and glandular elements

Gynecomastia
The most common breast disease in men originating from stromal or ductal elements is gynecomastia. Gynecomastia is commonly seen in neonates, adolescents during puberty and elderly men who have increased estrogen and decreased testosterone levels. Some other causes of gynecomastia include endocrine and hormonal disorders, Klinefelter's syndrome, systemic diseases, neoplasms, certain drugs and obesity.[5]

In present study 4 cases of gynecomastia were found out of 25 breast lesions(16%). The study done by Singh U.R. et al.[6] found 7 out of 10 cases of gynecomastia and study done by Pudale S et al. found 12 cases.[7]

Mastitis with or without abscess
Mastitis is an infection of breast that can be complicated by abscess formation. Mastitis again categorized as granulomatous and non- specific type. In present study 2/25 cases of mastitis were found which were non-specific type.

Fibro adenoma
Fibro adenoma in male is an extremely rare entity because of the absence of lobules in the male breast. Very few cases have been reported in the literature, and the few cases that have been reported are of fibro adenomas occurring in the settings of exogenous or endogenous estrogen stimulation.[7]
In present study 2/25 cases showed features of fibro adenoma.

Phyllodes tumor
We also find a case of phyllodes tumor in 1 patient which is very rare in men. Excision biopsy received from a 39 year old male patient having lump in breast size is about 13x8x 7cm with presence of slit like spaces in gross examination and on microscopic examination showed features of benign phyllodes tumor.

Breast malignancy
Male breast cancer is relatively rare and accounts for approximately 0.5% to 1% of all reported breast cancers. Early diagnosis is important because the overall prognosis is poorer in men because compared with women due to late detection.[8,9,10,11]

Various risk factors for development of male breast cancer have been identified. These include advanced age, family history of breast cancer, radiation exposure, cryptorchidism, testicular injury, Klinefelter syndrome, liver dysfunction and previous chest trauma. Hereditary breast cancer has also been associated with the risk of male breast cancer higher in patients with positive breast cancer2 (BRCA2) versus BRCA1 mutation.[12] Approximately 4% to 16% of male patients with breast cancer are carriers of the BRCA2 gene mutation.[13]

Invasive Ductal Carcinoma
Invasive ductal carcinoma of the "No Special Type" (NST) category is the most common male breast cancer representing more than 85% of all breast malignancies. In present study 9/25 (36%) patients had features of invasive ductal carcinoma.
Invasive Mucinous Carcinoma

Among the histological variants of male breast cancer, invasive mucinous carcinoma constitutes only approximately 1%. In present study 1/25 case showed features of invasive mucinous carcinoma. Specimen of breast received from a 55 year old male having breast lump. On macroscopic examinations showed a well circumscribed mass with friable consistency and mucoid texture. Microscopically, the diagnosis was based on the presence of tumor cells which are arranged in nest, tubular and solid patterns and floated in abundant extracellular mucin. Histologically mucinous carcinoma can be classified as mixed and pure form.

Faten Hammedi et.al. reported a case of mucinous carcinoma in a 75 year old man.[14]
Apocrine carcinoma
In present study 1 patient showed features of apocrine carcinoma. Specimen of right side of breast along with axillary lymph nodes received from a 58 year old male patient. After gross and microscopic examination diagnosed as apocrine carcinoma of breast. Cells are resemble the cells that line sweat glands. These cells have enlarged nuclei with prominent nucleoli & abundant eosinophilic, occasionally granular cytoplasm.

Mohammed Sekal, Kaoutar Znati et.al.reported a case of Apocrine carcinoma in male breast in a 70 year old man.[15]

Other rare tumors are squamous cell carcinoma and sarcoma 1 cases each. Biopsy received from a 63 year old man having chest wall tumor was confirmed as squamous cell carcinoma and biopsy received from a 14 year male patient having chest wall mass was diagnosed as soft tissue sarcoma.

5. Conclusion

Male patient will typically present symptomatically to the diagnostic departments. It is important to be aware of the spectrum of diseases that can afflict this population and to act on findings in an appropriate and expeditious manner. Careful evaluation of the gross and microscopic features and thorough knowledge of the male anatomy with consideration of alteration it can undergo under hormonal influences is important in evaluating the breast lesions. If a classic pattern of gynecomastia is present, the most frequent finding in male patient, it is helpful to direct the referring clinician to an underlying cause.

Carcinoma of male breast has many similarities to breast cancer in women, but rarity of the disease precludes large clinical trials necessary to define optimum treatment. Most studies point to a benefit from both adjuvant hormonal therapy and chemotherapy. In the adjuvant setting where the greatest benefit can be obtained from systemic therapy. The judicious use of adjuvant endocrine therapy for hormone-receptor-positive tumors and chemotherapy for patients with hormone-receptor-negative or receptor-positive tumors is recommended. Support system for men with breast cancer are rudimentary and need more resources and research at a international level.

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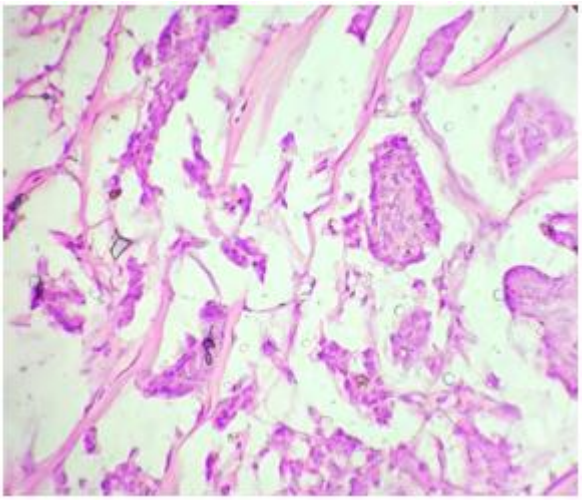

Figure 1: Mucinous carcinoma – The tumor cells are present as small clusters within large pools of mucin

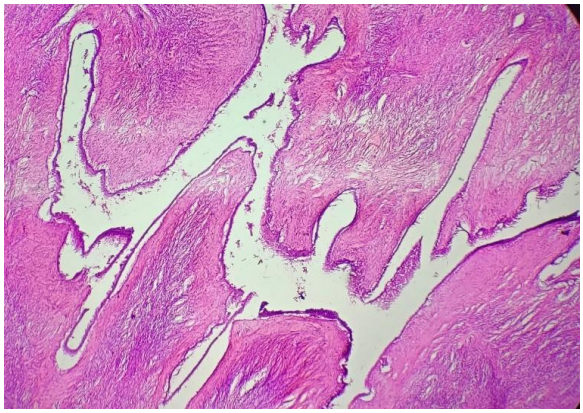

Figure 2: Phyllodes tumor- There is increased cellularity, cytologic atypia and stromal overgrowth giving rise to the typical leaf like architecture

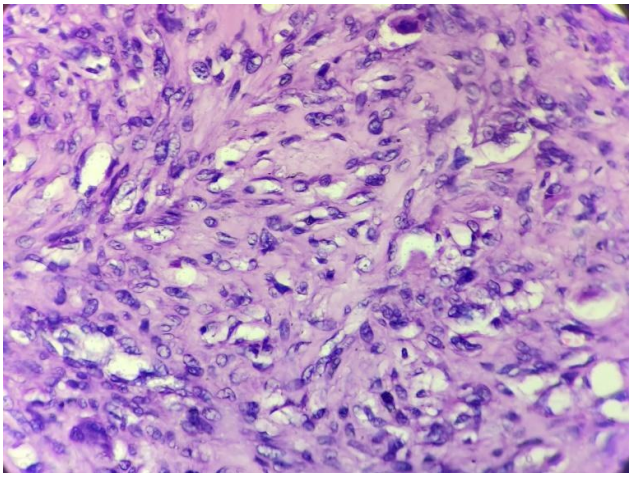

Figure 3: Sarcoma – Spindle cells with pleomorphism, mitosis and areas of necrosis

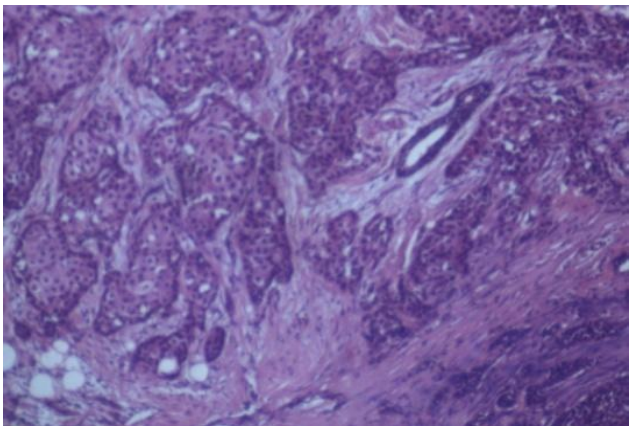

Figure 4: Apocrine carcinoma - pleomorphic, hyperchromatic nuclei, conspicuous nucleoli and abundant eosinophilic cytoplasm.

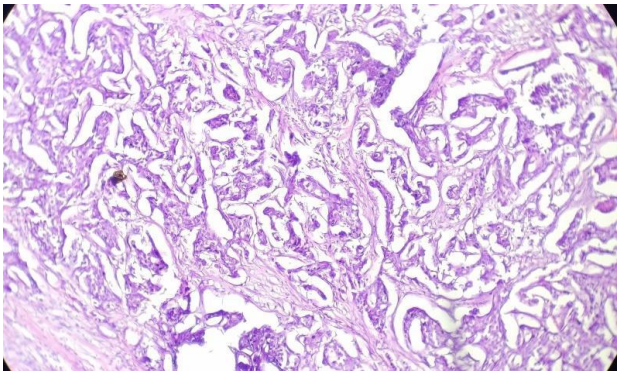

Figure 5: Infiltrating ductal carcinoma (NST)