



## Not All Lumps in Male Breast Referred to the Cancer Centre are Cancerous: A Single Institution Review

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### Abstract

**Background:** Presentations of the breast abnormalities in male can include palpable lump, pain, and nipple or skin changes. In female patients, these may be early signs of breast cancer. However in male patients, while the risk for breast cancer exists, alternative benign explanations are often possible. We presented a summary of symptom presentation and management of breast complaints in males, which ultimately resulted in a benign diagnosis.

**Methods:** A retrospective chart review of male patients referred with suspicion of breast cancer to our cancer centre was conducted to find out non-malignant breast diagnoses. Information regarding symptom presentation, diagnosis, histopathological results, management, and efficacy were extracted.

**Results:** Forty-four patients were assessed (average 57.7 years old, standard deviation  $18.3 \pm$  years). Twenty-eight patients had existing cancer diagnosis, the most common of which was prostate ( $N = 7$ ). The majority of patients presented with pain or tenderness ( $N = 32$ , 73%), palpable lump ( $N = 22$ , 50%), or swelling and inflammation ( $N = 13$ , 30%). Common investigations included mammogram ( $N = 37$ , 84%), which provided diagnosis of gynecomastia in 25 cases (68%). Gynecomastia was also the most common diagnosis ( $N = 31$ ). At the last follow up all patients except two were stable or symptom free with regards to their breast disease. Two patients experienced recurrence, one of whom had been diagnosed with gynecomastia, and the other with a recurring breast abscess.

**Conclusion:** Breast complaints in men may be due to a spectrum of diseases. Our review demonstrates that management can often be achieved thorough identifying the underlying cause.

### Keywords

Benign, Male breast, Retrospective review

## Introduction

Changes in breast morphology in male patients include palpitation of a breast lump, changes in skin or nipple characteristics such as colour change or presence of discharge, or pain. Although these symptoms may be concerning indicators for underlying disease, a benign, rather than malignant aetiology is more likely. The most common diagnoses of causes of male breast symptoms include gynecomastia, lipoma, and epidermal inclusion cysts [1].

Gynecomastia is the glandular proliferation and fat deposition in the male breast that results in progressive breast enlargement. It is reported to occur in 32-65% of men and presents commonly during puberty and among older males, as well as in neonates [2]. Gynecomastia is associated with an imbalance of the estrogen to andro-

gen ratio which may be caused by hormonal treatments such as androgen-deprivation therapies for prostate cancer [3]. Lipomas are benign tumours of adipose tissue that can present anywhere in the body, including the breast [4]. In addition to these, there are spectrums of

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**Received:** October 03, 2017; **Accepted:** November 30, 2017; **Published online:** December 02, 2017

**Citation:** Wan BA, Yee C, Ganesh V, et al. (2017) Not All Lumps in Male Breast Referred to the Cancer Centre are Cancerous: A Single Institution Review. Ann Breast Cancer Ther 1(1):21-23

male breast diseases that may have non-breast-tissue origin, such as cysts, or skin abnormalities [5].

In the event that examinations do not diagnose the condition, further investigation should be conducted in order to rule out malignancy. This includes radiological and sonographic findings, as well as biopsies and pathological diagnoses.

## Methods

A retrospective review was conducted during June 2017 to look for benign breast conditions diagnosed in all male patients initially referred with suspicion of breast cancer at the Odette Cancer Centre from March 1990 to June 2017. Patients were excluded if the referring breast complaint was diagnosed as cancer of any type originating in breast tissue or with ductal carcinoma *in situ*. Information including symptom presentation, radiographic and sonographic imaging, pathology, diagnosis, treatment, treatment response, and any relevant follow-up were extracted from patient charts and summarised. Results were summarised using descriptive statistics including mean, median, percentage, and standard deviation where appropriate.

## Results

### Patient characteristics

Forty-four patients were assessed in total. The average age at diagnosis was 57.7 years (standard deviation =  $\pm$  18.3 years, range 20-89 years). More than half of the patients had no previous diagnosis of cancer (N = 28, 63.6%). Of the patients with a history of cancer, prostate cancer was the most common (N = 7, 15.9%). Six patients (13.6%) had a family member who had been diagnosed with breast cancer. One of those patients had a history of breast cancer himself.

### Symptom presentation

Thirty-two patients (72.7%) presented with pain or tenderness. Twenty-two patients (50.0%) presented with a palpable lump, and 13 (29.5%) with swelling or inflammation of breast tissue. In most cases (N = 28), both symptoms were present. Most patients (N = 37, 84.1%) self-detected the abnormality.

### Investigations

Forty patients (90.9%) had diagnostic imaging in the form of a mammogram and/or an ultrasound. Thirty-seven patients (84.1%) had a mammogram. In 25 out of 37 cases, mammogram provided diagnosis of gynecomastia. In 12 cases, further investigation was done in the form of a biopsy. Five patients underwent surgery, 2 for excision and 3 for mastectomies. Reasons for undergoing surgery included pain or discomfort (N = 2), desire for definitive

treatment (N = 2), and removal of residual basal cell carcinoma cells from a previous excision (N = 1).

## Outcomes

The most common diagnosis (N = 31) was gynecomastia, which was most often localized to either the right or the left (N = 21). Other diagnoses included merkel cell carcinoma (N = 1), fat necrosis (N = 1), basal cell carcinoma (N = 1), benign lymph nodes (N = 1), stromal fibrosis (N = 1), fibroadenoma (N = 1), an inflammatory process of the nipple (N = 1), and a bite on the nipple (N = 1). In total, four patients underwent additional treatment in the form of antibiotics (N = 3) or amitriptyline (N = 1). At the last follow up, all patients except two were stable or symptom free with regards to their breast disease. Two patients experienced recurrence, one of whom had been diagnosed with gynecomastia, and the other with a recurring breast abscess.

## Discussion

Our study found that males present with a variety of breast complaints that may have a range of aetiologies. The vast majority of these cases were diagnosed as gynecomastia, which corroborates epidemiological findings in which gynecomastia are found in 32-65% of men [2]. Two skin malignancies were present, one case each of merkel cell carcinoma and basal cell carcinoma. While merkel cell carcinoma, particularly one arising from the breast, is extremely rare and presents with poor prognosis, basal cell carcinoma is one of the most common forms of cancer with excellent prognosis [6,7]. We have identified only one published account of a merkel cell carcinoma arising in the male breast [7]. Although it appears that merkel cell carcinoma of the breast is more common in females, no comparisons have been made due to the rarity of this disease.

Differential diagnoses to rule out male breast cancer often utilise mammograms and ultrasounds, much like the techniques employed in female breast cancer [8]. A study by Hanavadi, et al. argues that the role of mammography in the diagnosis of cancer in men with breast lumps is not well established, and that it is an unnecessary and overused imaging procedure in most men [9]. However, mammography is frequently used because of its proven sensitivity in both male and female breast cancer [8]. In this study, mammography was sufficient to provide a diagnosis of gynecomastia in the majority of cases.

Further, due to the nature of presentation, it is important for health care professionals to be aware of the spectrum of pathological processes that present as disease in the male breast [7]. As a result, it is key that we provide male patients with optimal care and establish the correct

diagnosis for their presenting complaints. Management strategies for these conditions differ according to diagnosis and aetiology, and include, but are not limited to, surgical resection and changes in drug regimen. Careful evaluation of these patients should be undertaken, and an understanding of the impact of hormonal variations on the male breast anatomy is key [7].

Our findings outline that male breast complaints may be due to a range of non-malignant origins. While there are a variety of differential diagnoses, malignant causes, although rare, must always be ruled out in each case.

### Acknowledgement

We thank the generous support of Bratty Family Fund, Michael and Karyn Goldstein Cancer Research Fund, Joey and Mary Furfari Cancer Research Fund, Pulenzas Cancer Research Fund, Joseph and Silvana Melara Cancer Research Fund, and Ofelia Cancer Research Fund.

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