



## Apocrine Carcinoma of the Male Breast: A Case Report

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### Abstract

Invasive Apocrine Carcinoma (IAC) of the breast is a rare form of Invasive Ductal Carcinoma (IDC). Whether or not IAC is clinically distinct from IDC is unclear. Some studies have reported that IAC is associated with poorer rates of disease-free survival and overall survival as compared to IDC, whereas others have found no significant difference in long term outcomes. Patients with IAC may be more susceptible to development of cancer in the contralateral breast, although this has rarely been addressed in the literature. The present study describes the case of a 67-year-old male who was diagnosed with and treated for IAC. Five years later, he was diagnosed with prostate cancer. Ten years later, the patient was diagnosed with IDC in the contralateral breast. At his most recent follow up, 15 years after his initial diagnosis, the patient was well with no signs of recurrence.

### Keywords

Invasive apocrine carcinoma, Male breast cancer, Oncology

### Introduction

Invasive Apocrine Carcinoma (IAC) of the breast is a rare subtype of Invasive Ductal Carcinoma (IDC), accounting for less than 1% of breast cancer cases [1]. According to the world health organization classification of breast cancer, IAC is considered to be IDC with apocrine differentiation [2]. IAC is characterized by the presence of granular and foamy cells in 90% of the tumor [3]. IAC tends to have Lower Estrogen Receptor (ER) and Progesterone Receptor (PR) over expression than IDC, while over expression of Androgen Receptor (AR) is more common [1,4-6]. Some subtypes of apocrine carcinoma, such as pure apocrine carcinoma, have been associated with worse outcomes in terms of disease free survival and overall survival than IDC [1,7,8]. Other subtypes, such as apocrine-like carcinoma, appear to be clinically indistinct from IDC [1,7,8]. Some evidence has been presented to suggest that patients with either form of apocrine carcinoma are at greater risk of developing contralateral breast cancer [8]. While apocrine breast carcinoma has been studied to some extent in women, the number of reported cases in men is extremely low; the significance of this diagnosis for men is therefore unclear [3,6].

We present the case of a 67-year-old male who was diagnosed with invasive apocrine breast cancer.

### Case Report

The patient was a 67-year-old, generally healthy male at the time of diagnosis. The patient's mother died of breast cancer, a maternal cousin was diagnosed with ovarian cancer, and a maternal uncle had renal cell carcinoma. The patient presented with a hard lump in his right breast approximately 2 cm in diameter, which was discovered when the patient's daughter noticed that his nipple appeared inverted. He had noticed "softness" in his right breast a year prior, which a dermatologist felt was probably benign. The patient had not experienced any discharge or bleeding from the nipple.

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A mammogram detected a 2.2 cm inhomogeneous mass, which measured approximately 2.5 cm on ultrasound. Ultrasound-guided biopsies were conducted and the tumor was determined to be a grade 3 invasive apocrine breast cancer. High Grade Ductal Carcinoma *In Situ* (DCIS) was also present, but accounted for less than 8% of the tumor. The patient had a radical mastectomy along with the excision of 18 axillary lymph nodes. All margins were negative. The pathology report revealed that 11 of the 18 lymph nodes were involved with macrometastases, and found presence of lymphovascular invasion with extranodal and dermal lymphatic involvement in addition to perineural invasion. The mass was determined to be Estrogen Receptor (ER) and Progesterone Receptor (PR) positive, as well as Human Epidermal Growth Factor Receptor 2 (HER2) negative. The patient was treated with six cycles of adjuvant chemotherapy with 5-Fluorouracil, Epirubicin, and Cyclophosphamide (FEC), followed by 5000 cGy in 25 fractions of adjuvant locoregional radiation therapy, and a 5-year course of tamoxifen.

Five years later, the patient was diagnosed with prostate cancer after a prostate biopsy (Gleason score of 9). He was treated with radical radiotherapy and approximately three years of hormone therapy with bicalutamide and goserelin acetate.

Four years after he was diagnosed with prostate cancer, a nodular opacity measuring 0.9 cm was identified in the patient's left breast during a routine follow-up mammogram and ultrasound. A reactive lymph node was also identified in the right axilla. A core biopsy of the new left breast mass identified grade 2 DCIS with grade 2 IDC which was ER positive (100%), PR weakly positive (2%), and HER2 negative. Fine-needle aspiration of the right sided axillary lymph node was negative for disease. The patient had a simple left mastectomy. The invasive component measured 1.5 cm in diameter, and all margins were negative. Four sentinel lymph nodes were removed, all of which were negative for malignancy. An Oncotype DX Breast Recurrence Score® was calculated and estimated that the patient's risk of recurrence within 10 years was 22%. The patient agreed to continue on tamoxifen in order to decrease his risk of recurrence, which was estimated to be reduced by 6.2%.

At his most recent follow up 5 years after left mastectomy, the patient showed no signs of recurrence. He continued on adjuvant endocrine therapy, and referred to a genetic counsellor because of his significant personal and family history of cancer.

## Discussion

The most common histological types of male breast cancer are IDC of no specific type (90%), followed by

DCIS (10%), then approximately equally by invasive papillary and medullary carcinomas of the breast (2%) [9]. Apocrine breast carcinoma is generally diagnosed using immune histochemical staining, ER, PR, and AR over expression [1,3]. In the case discussed above, the tumor pathology of the left breast carcinoma was ER 100%, PR 2%, and HER2 negative and therefore indicative of apocrine-like carcinoma, rather than pure apocrine carcinoma [8]. Unfortunately, the degree of ER and PR expression for the right breast carcinoma was unknown. The long-term prognosis for patients with apocrine-like carcinoma is not believed to be different from patients with IDC; however, this has not been studied extensively in cases with male patients [1,7,8].

The patient in this case was treated with a modified radical mastectomy, which has been the standard treatment for patients with IAC for many years [1,4,6]. Adjuvant treatment options for IAC include chemotherapy, radiotherapy, and hormone therapy, depending on the pathology of the tumor [5-8]. In this case, the patient was offered and received all three.

The combination of an unusual presentation of bilateral male breast cancer plus prostate cancer and a strong family history suggests that this patient has a genetic predisposition to cancer. In this case, genetic testing of the patient and his family members may reveal that they are carriers of one or more genes associated with cancer development.

The patient discussed above developed IDC in the contralateral breast, approximately 10 years after his initial diagnosis. This supports findings by Dellapasqua, et al. which suggested that patients with apocrine-like carcinoma as well as patients with pure apocrine carcinoma were more likely to develop contralateral breast cancer [8]. In particular, the combination of the uncommon apocrine-like carcinoma histological type with an unusual bilateral breast cancer diagnosis in males defines this as a particularly rare case. Therefore, its presentation and pathophysiology may be of significance for physicians recommending treatment options to patients with IAC.

## Conclusions

Invasive apocrine carcinoma of the breast is a rare form of invasive ductal carcinoma [1]. The incidence and significance of IAC in men is not well-understood [3,6]. Despite well-understood differences in histology and hormone receptor expression, the differential diagnosis of IAC is often considered to be clinically insignificant [1,4-8]. However, it has been suggested that patients with IAC are more likely to be diagnosed with contralateral breast cancer later in life [8]. For these reasons, men diagnosed with IAC should be followed closely, and be considered for genetic testing.

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