Second Primary Breast Cancer in Men with Prostate Adenocarcinoma Treated by Decapeptyl: A Case Report

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ABSTRACT

Introduction: Breast cancer in men is a rare disease, especially in association with prostate cancer. Risk factors are multifactorial and include environmental factors, genetic susceptibility and hormonal treatments. Decapeptyl an analogue to gonadorelin (GnRH-agonist) used, in association with surgery, in treatment for prostate adenocarcinoma may likely cause breast cancer in these patients. Case presentation: A 56-year-old man followed for a non-metastatic prostate adenocarcinoma presents after ten months of treatment with Decapeptyl a breast tumor. After resection of the breast carcinoma, the histological find an invasive breast carcinoma no special type (NST) grade II of SBR. The immunohistochemical study of the tumor specimen was positive for estrogen receptor (70 to 100 % of tumoral surface), progesterone receptor (50 to 70 % of tumoral surface) and Hercep Test of score 3+ (HER 2 positive).

Discussion: The risk of male breast cancer with long-term steroidal anti-androgens is well documented; however, the risk of male breast cancer with a synthetic gonadotropin-releasing hormone (GnRH) is extremely rare. Only one case presenting a breast cancer after treatment with leuprolide (GnRH-agonist) has been reported in the literature, and obviously this is the first case of mammary carcinoma in men secondary to treatment with Decapeptyl. The majority of these breast cancers in men are invasive breast carcinoma no-special type or unclassified. Other types of tumors are very rare. Decapeptyl contains the active ingredient Triptorelin used to treat prostate cancer, which normally has to decrease breast cancer risk, but in this case it appears to be involved in the appearance of a second primary tumor in men diagnosed with prostate cancer.

Conclusion: This report illustrates a case of invasive breast carcinoma in a man followed for prostate adenocarcinoma and treated by Decapeptyl. This treatment seems to be the principal risk factor involved in the appearance of a second primary tumor in men diagnosed with prostate cancer.

Keywords: Male breast cancer, Decapeptyl, Prostate cancer

1. INTRODUCTION

Male breast carcinoma is a rare disease; often detected later, with an age-standardized incidence rate of 1.44 per 100,000 men and accounting globally for less than 1% of all breast cancers. The peak incidence is around 71 years¹, but it is earlier and rarely bilateral in a patient treated with hormone therapy². The main risk factor is of genetic origin, 15 to 20% of men with breast cancer have a family history in the first degree, and 10% to 16 % have damaging mutation in a predisposition gene.

The most commonly involved genes are BRCA1 and, more particularly, BRCA2\(^{(3,4)}\). Other risk factors are hormonal (Klinefelter’s syndrome), environmental or iatrogenic\(^{(5)}\).

Decapeptyl is an effective treatment for prostate cancer; however and to the best of our knowledge, a case of second primary male breast cancer while receiving synthetic gonadotropin-releasing hormone (GnRH) agonist (leuprolide) was reported in the literature\(^{(6)}\).

2. CASE PRESENTATION

A 56-year-old male presented with dysuria, gross hematuria and intermittent left abdominal pain. He had insulin-dependent diabetes with chronic renal failure on haemodialysis and without neither familial history of prostate or breast cancer nor any risk factor for both cancers.

On rectal examination, the prostate was increased in volume, with hard consistency and an irregular surface. The rest of physical examination was unremarkable.

Complete blood count showed an anemia with hemoglobin level of 10.6 g/dL. The initial prostate-specific antigen (PSA) level was 18.95 ng/ml. A transurethral resection of the prostate (TURP) was performed two months after the onset of symptoms. The histological study revealed a prostate adenocarcinoma with Gleason score 9 (4 + 5). The thoracic-abdominal-pelvic computed tomography CT did not show any metastasis.

The patient was treated with three injections of Decapeptyl at three-month interval and did not receive any radiotherapy. Thirteen months after onset of symptoms and ten months after initiation of hormonal therapy, the patient presented a 2 cm mass in the left breast (fig. 1). After tumorectomy, the histopathological examination showed an invasive breast carcinoma of no special type II of SBR (fig. 2). This proliferation is associated with an intermediate grade ductal carcinoma in situ with compact and cribriform component, estimated at 20% of the proliferation, and with the presence of peritumoral vascular invasion. The immunohistochemical study showed an intense and diffuse tumor cells staining for estrogen receptor (70 to 100 % of tumoral surface), a moderate and partial expression for progesterone receptor (50 to 70 % of tumoral surface) and a Hercep Test of score 3+ (HER 2 positive) (fig. 3).

![Fig. 1. Macroscopic appearance of the breast carcinoma](Image)
Given that the surgical margins were positive, one month later, the patient underwent a radical mastectomy with lymph node dissection whose histological study revealed the presence of a microscopic residual focus of the tumor with a metastatic ganglion.

3. DISCUSSION

The risk of male breast cancer with long-term steroidal antiandrogens is well documented\(^6,7\). In a prospective study of 1554 cases, followed for benign prostatic hyperplasia and received finasteride 5 mg daily, the risk of male breast cancer was estimated to be 0.25% with a median follow-up of 4.5 years\(^6\). However, the risk of male breast cancer with synthetic gonadotropin-releasing hormone (GnRH) agonists seems to be extremely rare, to the best of our knowledge, only one case (treated with leuprolide) has been reported in the literature\(^6\). Visibly this is the first case of mammary carcinoma in men secondary to treatment with Decapeptyl. For Weiss\(^8\), a family
history of breast cancer in a man or woman in the first degree is associated with a risk multiplied by two to three. Harmful mutation in BRCA1 and/or BRCA2 genes are incriminated in a proportion of breast cancer in men but with a lower absolute risk than in women and a lower frequency\(^9,10\). Monitoring data of 2000 patients from SEER program (Surveillance, Epidemiology and End Results Cancer Registry) showed that 93.7% of male breast cancers were ductal or unclassified, while 2.6% were papillary, 1.8% were mucinous and only 1.5% were lobular\(^11\). These tumors are strongly hormone-dependent. Approximately, 90% express the estrogen receptor and 81% the progesterone receptor\(^11\). A study on a series of 75 patients showed that 5% of male breast cancers over expressed HER2\(^12\). The role of androgen receptors is unclear and has no consequences on the prognosis of male breast cancer\(^13,14\).

In our case, the histological find an invasive breast carcinoma no special type (NST) grade II of SBR. The immunohistochemical study showed an intense and diffuse tumor cells staining for estrogen receptor, a moderate and partial expression for progesterone receptor, which is consistent with previous studies. From the fact that our patient has no factor favouring and shows a Hercep Test of score 3+ (HER2 positive), while the most of the male breast carcinoma BRCA1-related are negative HER2\(^4\), we can assume that in this case male breast cancer is secondary to the treatment by the decapeptyl. Radical mastectomy was more commonly used in older case series, likely reflecting both practice patterns (radical and modified radical mastectomies) and later stage at diagnosis of patients in the older series\(^3\), despite the fact that retrospective studies have shown that the prognosis is the same as for less invasive surgery\(^15\).

In a series of 31 cases of ductal carcinoma in situ, Cutuli et al.\(^5\) showed three recurrences after six lumpectomies (50%) whereas they found only one recurrence after 25 mastectomies (4%). The small size of the mammary gland makes it difficult to have negative surgical margins. Therefore, lumpectomy is not recommended\(^16\). Male breast anatomy may also contribute to the increased rate of radical mastectomy.

Breast cancer in men seems to have a more pejorative prognosis than in women. However, recent studies have demonstrated that the prognosis for male breast cancer is similar to female breast cancer, when compared stage for stage\(^17\). Tumor size and lymph node involvement are two important prognostic factors in male breast cancer\(^11\).

Our patient had undergone a lumpectomy. The limits of tumor excrescences after histological study were tumorous. Carcinological surgery was completed by a mastectomy with lymph node dissection.

This case shows that a malignant breast tumor should be evoked during the appearance of a breast mass in a patient with prostate cancer and treated with GnRH agonist, especially if there are other risk factors such as a harmful mutation in BRCA1 and/or BRCA2 genes.

Decapeptyl is an effective treatment for prostate cancer, which normally has to reduce the risk of male breast cancer, but in this case the breast cancer probably represents resistance to this molecule. Since our patient has been treated with Decapeptyl for 10 months and has no family history of breast cancer or other favouring factors, and suffers HER2 positive non-specific breast carcinoma, this tumor is most likely secondary to this molecule.

4. CONCLUSION

Male breast cancer is a rare disease, often diagnosed at a late age and at a more advanced stage than in women\(^6\). The risk factors are multiple and varied but the genetic factor remains the most important (mutations in BRCA1 and/or BRCA2 genes)\(^4\). The clinical presentation of the disease differs slightly in men. All histological varieties can be seen in men with predominant of the invasive breast carcinoma no special type\(^11\).

The synthetic Decapeptide similar to natural GnRH-agonists, useful in the treatment of prostate and hormone receptor-positive breast cancers, has been involved for the first time in the appearance of mammary carcinoma in men but remains an important hormonal factor.

REFERENCES
