Bilateral Male Breast Cancer and Prostate Cancer: A Case Report

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Male breast cancer, consisting only 1% of all breast cancers, is occasionally associated with other primary malignancies, especially in patients with familial breast cancer history. Sporadic male breast cancers with another primary tumor are extremely rare. We report a 67-year-old male with asynchronous bilateral breast cancer and prostate cancer without familial breast cancer history.

Key words: multiple primary tumors – breast cancer – prostate cancer

INTRODUCTION

Breast carcinoma is rarely seen in males. Infiltrating ductal carcinoma is the predominant histologic type. Because most men with breast carcinoma have estrogen and progesterone receptor positive tumors, male breast cancer is likely to respond to hormonal manipulation (1–3). The incidence of contralateral breast cancer was reported as 2.7% in male breast cancer patients, similar to that in women (4). Prostate cancer is one of the leading causes of cancer death in men aged 65 or older. Little is yet known about the etiopathogenesis of the prostate cancer. There is some evidence regarding genetic predispositions and familial associations for this cancer (5–8). Despite male breast and prostate cancers being very similar in etiopathogenetic properties, their combination is unusual. We report here a male patient with asynchronous bilateral breast cancer and prostate cancer, which is a rarely reported situation.

CASE REPORT

A 67-year-old male was hospitalized with a 3 cm mass in his left breast. He had no history of familial breast cancer, any solid organ tumors or gynecomastia. Tumor markers and hormonal profile were normal [carcinoembryonic antigen (CEA) 0.01 µg/ml, CA 15-3 29 kU/l, follicle stimulating hormone 10.3 IU/l, luteinizing hormone 8.0 IU/l, total testosterone 14.35 nmol/l, progesterone 2.1 nmol/l, estradiol 102 pmol/l, aldosterone 80 pmol/l]. Examination of modified radical mastectomy and axillary dissection specimens revealed an estrogen receptor positive (90%), progesterone receptor positive (20%) and HER-2/neu amplification positive, poorly differentiated infiltrative carcinoma mostly growing as solid areas and virtually devoid of gland formation (Fig. 1). No axillary lymph node involvement was found. He was treated with external radiotherapy to the chest wall, axilla and supravacular fossa with doses of 50 Gy (2 Gy dose daily, five weekly fractions). Adjuvant chemo- or hormone therapy was not carried out owing to our concept at that time.

Multiple metastatic lesions in both lobes of the liver were determined by abdominal CT, 3 years after radiotherapy. Histopathological examination of the lesions revealed breast ductal carcinoma metastasis. Oral tamoxifen 20 mg daily was started for up to 5 years and the patient was treated with hepatic arterial chemoembolization, which was done by percutaneous catheterization of the femoral artery using the Seldinger technique (50 mg adriamycin and 10 ml lipiodol were mixed as an emulsion and injected slowly under fluoroscopic guidance). Chemoembolization was done every 6 weeks. At the end of the fifth chemoembolization session there was no heterogeneity and no mass lesion was visible in the liver. Two months later, the patient was admitted to the hospital with frequent urination, hesitancy and narrowing of urine stream. Prostate irregularity was observed on digital rectal examination and trans-rectal ultrasonography showed a 15.1 mm lesion in the left peripheral zone of the prostate and the capsule was intact. Prostate-specific antigen (PSA) level was fivefold higher than the reference value (20.8 µg/l). Examination of the needle biopsy material revealed a progesterone receptor positive (70%), estrogen receptor negative (0%), HER-2/neu negative, moderately differentiated adenocarcinoma (Gleason score = 6) (Fig. 2). The tumor was composed of single, separate, variable glands infiltrating among larger benign glands and smoothly circumscribed cribriform nodules. One month later, metastasis to the sternum and sacrum was detected by bone scintigraphy. The PSA, CA 15-3 and CEA values were 26.3 µg/l, 115.2 kU/l and 2.4 µg/l, respectively. After external radiotherapy to the pelvic region in doses of 40 Gy (2 Gy dose daily, five weekly fractions) and to the prostate with boost doses of 20 Gy in 2 weeks, he was treated with oral medroxyprogesterone acetate, 320 mg...
daily for eight months. The PSA and CA 15-3 levels decreased
to the normal ranges quickly (0.38 µg/l and 22.3 kU/l, respec-
tively) and the patient became symptom free within 19 months.

About 7 years after the diagnosis of the left breast cancer,
two nodules were detected in the contralateral breast; one in
the subareolar region and the other in the inferomedial area of
the breast, both 0.5 cm in diameter. The CA 15-3 level was
high (59.9 kU/l) and the PSA level was normal (1.2 µg/l) at
that time. The histopathological diagnosis of both lesions was
moderately differentiated infiltrative carcinoma (Fig. 3). The
tumor showed well-developed glandular differentiation, well-
defined nests and some individual cell infiltrations. External
radiotherapy was given to right chest wall in dose of 36 Gy in
12 fractions and six cycles of paclitaxel, 175 mg/m², were
administered. Despite achieving partial remission initially, the
patient died from progressive breast cancer 102 months after
the first diagnosis. The terminal findings were local recurrence
on the chest wall, pulmonary parenchymal metastases, medias-
tinal lymph node metastases, extensive bone metastases and
liver metastasis. A graph documenting the clinical course of
this case chronologically is shown in Fig. 4.

DISCUSSION

The overall incidence of multiple primary cancers among
cancer patients is 0.83%. The interval between the onsets of
two cancers varies from 1 month to 30 years. The majority of
the patients are male. The most commonly diagnosed multiple
primary cancers are larynx and lung cancers, followed by lip
and larynx cancers. Such malignancies, which occur together,
probably have similar etiopathogenetic mechanisms (9).

The incidence of synchronous or metachronous contralateral
breast cancer was reported as 2.7% in male breast cancer
patients, similar to that of women (4). However, the incidence
of synchronous or metachronous cancer was reported as 10.6%
for male breast cancer patients, higher than that of women, and
the most frequent sites were the prostate (21%), lung (14%),
colon and rectum (14%) and esophagus (9%) (4). Combination
of bilateral male breast cancer and prostate cancer is a rare
condition, which has been reported in only 19 patients in the
literature (4,10). As with our patient, just a few cases of this
combination without a family history of breast cancer have
been reported (7,11–13).

Prostate and male breast cancers have some similarities in
terms of etiology, epidemiology and treatment approaches (4,8).
Hormonal, genetic and environmental factors appear to be
important in the development of male breast and prostate
cancers (6–14). In our case, we could not find any morphological
similarity between the two tumors. The first appearing
tumor in the left breast was a poorly differentiated invasive
carcinoma showing high nuclear grade. The tumor in the pros-
tate had the typical morphology of prostatic adenocarcinoma
such as growth pattern, glandular differentiation and cytological
features. The tumor in the right breast that finally appeared was
a moderately differentiated carcinoma revealing glandular
differentiation. The lesion in the inferomedial area of the right
breast had the same morphology as the last one. Neither of
the tumors of the left and right breast had an intraductal component.
We found it difficult to interpret tumors of the prostate and right
breast as metastatic because of the striking morphological differ-
nces. The prostatic tumor revealed the typical histology of
prostate cancers (21), but we did not find any relation between the two tumors in terms of HER-2/neu gene.

This case is a rare combination of multiple primary tumors. The absence of familial breast cancer history and the discordance of the HER-2/neu and hormone receptors status between the two tumors in our patient do not confirm the common opinion that breast and prostate cancers may develop due to similar factors. In our opinion, it is too early to conclude that the presence of breast cancer in a male can increase the risk of prostate cancer or vice versa. However, because such a combination is rarely diagnosed, it may be recommended that when either a breast or prostate cancer is diagnosed in a male patient, clinicians should be alert for the other.

References