Adjuvant Radiotherapy for Male Breast Carcinoma

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ABSTRACT

Breast cancer accounts for 0.2%-1.5% of all malignant tumors in males and 1% of all breast cancers. Unfortunately, to date, almost all data concerning its treatment and prognostic factors have been obtained from epidemiological and clinical studies involving only females, although the incidence of male breast cancer is increasing. Herein, we present male breast cancer patients at our center. This study included 10 consecutive male patients with a diagnosis of breast cancer. All the patients were treated between January 2002 and February 2010. The median age of the patients was 69.5 years (range: 57-85 years) at presentation, and all underwent surgical treatment. Two of the patients were not given chemotherapy, one because of bone metastasis and the other due to advanced age. Curative radiotherapy was performed in all but 1 of the patients. Median follow-up was 36 months (range: 7-77 months). Although prognostic factors in male breast cancer patients are similar to those in females, and early diagnosis and use of adjuvant treatment (radiotherapy, hormone therapy, and chemotherapy) decreases the rate of local recurrence and increases survival similarly as in females, additional research is necessary for determining the optimal treatment strategy for this disease in males.

Key words: *Male, breast cancer, adjuvant radiotherapy*

Erkek Meme Kanseri İçin Radyoterapi

ÖZET

Erkek cinsiyette meme kanseri, tüm malign tümörlerin % 0.2 ile % 1.5'ini , tüm meme kanserlerinin de %1'ini oluşturur. Erkek meme kanserinin insidansında yükselme olmasına rağmen, malesef, bugüne kadar, tedavi ve prognostik faktörler kadın meme kanserlerinin epidemiyolojik ve klinik çalışmalarında elde edilmiş sonuçlara dayanmaktadır. Biz burada bizim kliniğimizde tedavi edilen erkek meme kanserli hastaları sunduk. Retrospektif olarak radyasyon onkolojisi kliniğine başvuran erkek meme kanserli hastaların incelenmesi. Meme kanseri tanısıyla başvuran 10 erkek hasta çalışmaya dahil edilmiştir. Hastaların hepsi Ocak 2002 ile Şubat 2010 arasında tedavi almışlardır. Hastaların tanı anındaki medyan yaşı 69.5'dir. (57 ile 85 arasında). Hastaların tümüne cerrahi tedavi uygulanmıştır. Bir hasta kemik metastazı nedeniyle, bir hasta da ileri yaş nedeniyle kemoterapi almamıştır. Bir hasta hariç tüm hastalara küratif radyoterapi uygulanmıştır. Medyan takip süresi 36 aydır (7 ile 77 ay arasında). Erkek meme kanserindeki prognostik faktörlerin kadınlardakine benzer olması nedeniyle erken tanı ve adjuvant tedavinin uygulanımı (radyoterapi, hormonal tedavi ve kemoterapi) kadın meme kanserli hastalarda olduğu gibi lokal nüksü azaltmakta ve sağ kalımı artırmaktadır. Bununla beraber erkek cinsiyette görülen meme kanserinin optimal tedavisini saptamak için çalışmalar yapılması hala bir gereklilik halindedir.

Anahtar kelimeler: *Erkek, meme kanseri, adjuvan radyoterapi*

INTRODUCTION

The incidence of breast cancer in males is just 1% of that observed in females, and it accounts for ≤1.5% of all cancers in males (1, 2). The low incidence rate makes it difficult to conduct randomized clinical trials or orchestrate prospective studies (3). Most data regarding adjuvant treatment for male breast cancer come from small retrospective studies, and treatments are primarily based on the findings from studies on female breast cancer. Most authors suggest using the same therapies for male patients as used for female breast cancer patients (3). In contrast to females, breast cancer in males reaches its peak incidence at 60 years of age and the most com-

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mon histological type is ductal carcinoma. Among the risk factors, the most important are breast cancer in a first-degree relative, monogamy, a history of benign breast disease, and chest-wall irradiation. Smoking, alcohol consumption, obesity, hormonal treatment, Klinefelter syndrome, and exposure to electromagnetic irradiation are other reported factors, although they have not been clearly established (4). Male patients generally present at a later stage and as they have less breast tissue, they usually present with palpable sub-areolar masses at the time of diagnosis (5).

The present study aimed to retrospectively evaluate the effect adjuvant radiotherapy on the male patients referred to our center with a diagnosis of breast cancer.

MATERIAL AND METHODS

We enrolled 659 female patients and 10 male patients with breast cancer diagnosed between January 2002 and February 2010 for analysis. The present paper includes the 10 male patients only. Informed consent was obtained from the patients.

The patients were staged according to the American Joint Committee on Cancer (AJCC) 2002 tumor-node-metastasis (TNM) cancer staging system. All patients were assessed histopathologically and investigated for estrogen and progesterone receptor status, as well as C-erb2 . Indications for both curatively and palliatively irradiation in male breast cancer patients were as same as those in female breast cancer patients.

Of the patients 9 underwent irradiation prior to surgery postoperatively, 1 patient was irradiated in palliative intend as after surgery bone metastasis was detected before initiation of radiotherapy. In all, 9 of the patients were given a 200-cGy daily dose of curative radiotherapy, with a total dose of 5000 cGy over 25 fractions by Cobalt 60 teletherapy unit. Radiaotherapy was admistered to the chestwall through tangential portals if curatively irradiated and supraclaviculary fossa and axillary fossa were included if nodal involvement was present. A total of 3000-cGy palliative radiotherapy was administered to the involved bones as 300-cGy daily fractions. Hormonotherapy was advised by medical oncologists according to the hormonal status of the patients.

As our patient population was small, inferential statistics (univariate and multivariate analyses) were not used

RESULTS

None of the male patients had a family history of breast cancer, history of benign breast disease, or history of radiation exposure. All the male patients were monogamous. The median age of the patients was 65 years (range: 57 to 85 years). In all, 7 of the patients underwent left radical mastectomy and 3 patients underwent right radical mastectomy. Estrogen receptor was positive in 7 patients (70%) and progesterone receptor was positive in 6 (60%). C-erb2 was positive in 4 of the 6 patients that were tested. Chemotherapy was not given to the two patients because of bone metastasis and advanced age. The elderly patient was treated only with tamoksifen. Chemotherapy was administered to the remaining 8 patients. Follow-up period ranged from 7-77 months (median: 36 months). At the end of the follow-up period 7 of the patients were alive. Three of them died during the follow-up. One of the deceased patients was metastatic at presentation; the remaining 2 presented with stage T4N0 and stage T3N0 disease. None of the patients with nodal involvement died. In terms of nodal status, 4 patients had N2 and 1 had N3 disease. The results and patient characteristics are summarized in the Table.

DISCUSSION

Male breast cancer is one of the most rarely occurring tumors, accounting for 1% of cancers (6). We documented 10 males and 659 females with breast cancer during an 8-year period: males constituted 1.5% of our breast cancer patient population. According to the literature, mean age at the time of breast cancer diagnosis in males ranges between 53 and 65 years (4, 6); median age at diagnosis was higher in the present study-69.5 years.

Infiltrative ductal carcinoma is the most common histological type reported in the literature. The pathological diagnosis in all the presented patients was similar. On the other hand, whereas the primary causes of male breast cancer are reported to be a hyper-estrogenic state, Klinefelter syndrome, gynecomastia, trauma, and exposure to radiation (4), none of these causes were observed in the presented patients.

***Table**. The characteristics of the patients.*

Age	*66*	*60*	*85*	*71*	*68*	*62*	*71*	*57*	*72*	*71*
TNM	$T_2N_2M_0$	$T_4N_0M_1$	$T_4N_0M_0$	$T_4N_0M_0$	$T_3N_2M_0$	$T_4N_2M_0$	$T_3N_0M_0$	$T_1N_2M_0$	$T_4N_3M_0$	$T_4N_0M_0$
Histology	*IDC*	*IDC*	*IDC*	*IDC*	*IDC*	*IDC*	*IDC*	*IDC*	*IDC*	*IDC*
ERS	*+ (<10%)*	*-*	*+ (<10%)*	*+*	*+ (<20%)*	*+*	*-*	*+*	*+ (<5%)*	*-*
PRS	*-*	*-*	*+ (<10%)*	*-*	*+*	*+*	*+*	*+*	*+ (<5%)*	*-*
C-erb B_2	*-*	*+*	*+*	*-*	*NA*	*+*	*NA*	*NA*	*+*	*NA*
Type of Surgery	*LRM*	*LRM*	*RRM*	*LRM*	*RRM*	*RRM*	*LRM*	*LRM*	*LRM*	*LRM*
Date of surgery	*2004*	*2002*	*2004*	*2004*	*2007*	*2006*	*2006*	*2009*	*2010*	*2004*
Chemotherapy	*4 cycle CEF*	*no*	*no T*	*4 cycle CE*	*4 cycle CA+D*	*4 cycle CAF*	*6 cycle CE+T*	*3 cycle CA+T*	*4 cycle CAF*	*4 cycle CE*
Radiotherapy	*200 cGy/frc*	*300 cGy/frc*	*200 cGy/frc*	*200 cGy/frc*	*200 cGy/frc*	*200 cGy/frc*	*200 cGy/frc*	*200 cGy/frc*	*200 cGy/frc*	*200 cGy/frc*
Radiotherapy total dose	*5000*	*3000*	*5000*	*5000*	*5000*	*5000*	*5000*	*5000*	*5000*	*5000*
Patient status	*Alive*	*Dead*	*Dead*	*Alive*	*Alive*	*Alive*	*Alive*	*Alive*	*Alive*	*Alive*
Follow-up, months	*75*	*24*	*13*	*75*	*39*	*36*	*18*	*10*	*7*	*77*

ERS; Estrogen Receptor Status, PRS; Progesterone Receptor Status IDC: Infiltrating ductal carcinoma, LRM: Left radical mastectomy, RRM: Right radical mastectomy, CEF: Cyclophosphamide, epirubicin, fluorouracil, T: Tamoxifen, D: Docataxel, CE: Cyclophosphamide, epirubicin, CA: Cyclophosphamide, adriamycin, CAF: Cyclophosphamide, adriamycin, fluorouracil

Data regarding the benefits of irradiation for male breast cancer are limited. To date, no beneficial effects of irradiation have been clearly shown, other than that it prevents local recurrence (7). Tumor size and nodal status are proven predictors of prognosis (5). Two of the presented patients that died had T4 disease, 1 of which had bone metastases at presentation. Tamoxifen is not used in metastatic patients.

As our patient population was small, inferential statistics (univariate and multivariate analyses) were not used. All the patients in the present study were given radiotherapy; therefore, we could not make a comparison of radiotherapy versus no radiotherapy. We think that larger multicenter studies are necessary for determining treatment effectiveness and optimal disease management.

It has been suggested that breast cancer prognostic factors are the same in males and females. Early diagnosis and adjuvant treatments (radiotherapy/ hormone therapy/ chemotherapy) are thought to lead to lower rates of local recurrence and prolonged survival in male breast cancer patients, hopefully mimicking what already has been proven in female patients. Radiotherapy after modified radical mastectomy is still accepted as the optimal treatment regimen (4); however, larger multicenter studies are necessary to verify these assumptions.

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