

LOCO-REGIONAL RECURRENCE AFTER BREAST CANCER TREATMENT MIMICKING COSTOCHONDRITIS

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ABSTRACT

It is important to follow breast cancer patients after their initial treatment as loco-regional recurrences are potentially treatable and local failure has shown to adversely affect overall survival. Herein, we present a 49-year-old premenopausal Caucasian woman who was treated with neoadjuvant chemotherapy, breast-conserving surgery (BCS), and adjuvant chemo-radiotherapy for invasive ductal carcinoma of the right breast in 1998 that subsequently developed a loco-regional recurrence eight years after treatment that presented with lymphedema and chest wall pain. Her clinical exams, yearly mammograms, consecutive chest x-rays, and bone scans did not reveal evidence of recurrent disease thus, for two years her symptoms were attributed to costochondritis by her primary care physician. She was evaluated in our lymphedema clinic with right arm lymphedema and persisting chest wall pain. A Fluorodeoxyglucose-Positron Emission Tomography/Computed Tomography (FDG-PET/CT) scan was performed and it revealed a soft tissue mass between the anterior costochondral junctions of the right sided 3rd and 4th ribs along the internal mammary chain. Fine needle aspiration biopsy confirmed an adenocarcinoma originating from breast. After complete chest wall mass resection and subsequent chemo-radiotherapy, she is free of symptoms. In conclusion, a careful clinical examination and accurate diagnostic work-up to exclude recurrence is essential in the follow-up of patients with a history of breast cancer, before accrediting symptoms to a non-cancerous etiology.

Key words: Loco-regional recurrence, PET-CT, costochondritis

Introduction

With ongoing trials and advances obtained in the treatment of breast cancer, an increasing number of women are surviving this disease. Comprehensive and close surveillance with clinical examination and imaging is essential in the follow-up of these women. Early detection and treatment of recurrences may improve survival in some patients (1). Recurrences that can be controlled affect 1-1.5 % per year of women with breast cancer and the majority of them occur later than 3 years after initial treatment (2). Routine clinical examination and annual mammography are recommended for the early detection of loco-regional recurrences. Herein, we present a patient in which a loco-regional recurrence on the chest wall emerged eight years after BCS and who was symptomatic for

MEME KANSERİ TEDAVİSİ SONRASI KOSTOKONDRİTİ TAKLİT EDEN LOKAL REKÜRRENS

ÖZET

Lokorejyonel nüksler genellikle tedavi edilebilir olduđu ve lokal başarısızlık hasta sađ kalımını olumsuz etkilediđi için meme kanseri tedavisi görmüş hastalarda takip önemlidir. Bu makalede sađ memede invaziv duktal karsinom nedeniyle meme koruyucu cerrahi uygulandıktan ve post-operatif adjuvan kemoradyoterapi aldıktan 8 yıl sonra sađ kolda lenfödem ve göğüs ağrısı ile başvuran 47 yaşında bir kadın hasta sunulmaktadır. Fizik muayene, mamografi, tekrarlanan akciđer grafisi ve kemik sintigrafilerinde bir özellik saptanmayan hasta 2 yıl boyunca kostokondrit tanısı ile dış merkezde takip edildi. Hasta lenfödem kliniđimize sađ kolda lenfödem ve devam eden göğüs duvarı ağrısı ile başvurdu. Olası lokal rekürrensi ekarte etmek üzere FDG-PET tetkiki istendi. Sađ 3. ve 4. kostokondral bileşke üzerinde yumuşak doku kitlesi saptanması üzerine bu kitleden ultrasonografi eşliđinde biyopsi yapıldı. Patolojik incelemede kitle, meme kanseri kaynaklı metastatik adenokarsinom olarak rapor edildi. Geniş lokal eksizyon sonrası kemo-radyoterapi alan hastanın semptomları tamamen geriledi. Sonuç olarak meme kanseri öyküsü olan hastaların takibinde, hasta yakınmasını kanser dışı nedenlere bağlamadan önce rekürrensi ekarte etmek için dikkatli bir klinik muayene yanında gerekli ve yeterli tanısıl tetkikler yapılmalıdır.

Anahtar sözcükler: Loko-rejyonel rekürrens, PET-CT, kostokondrit

nearly two years. The aim of this case report is to emphasize the importance of employing accurate diagnostic tools to obtain a correct diagnosis to exclude a recurrence before reaching a non-cancerous diagnosis in any patient with history of breast cancer.

Case

A 49-year-old premenopausal Caucasian woman presented to our lymphedema clinic with right arm lymphedema and anterior chest wall pain on September of 2008. In 1998, she was diagnosed with a right 12 o'clock invasive breast carcinoma, clinically measuring 3.5 x 3.0 cm. She received four cycles of neoadjuvant chemotherapy with doxorubicin and cyclophosphamide with partial clinical response, and later underwent breast conserving surgery

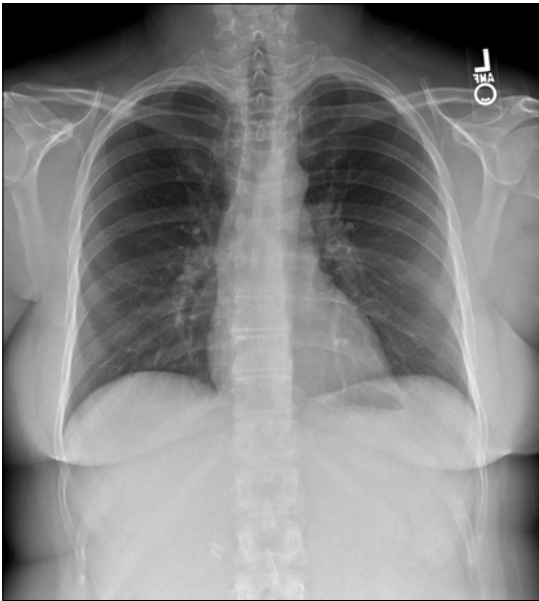


Image 1. Negative chest x-rays for lung metastasis or active cardiopulmonary disease.

(BCS) with axillary staging in another medical institution. The surgical specimen revealed a 1.5 x 1.2 x 1.2 cm invasive ductal carcinoma; grade II, with a component of ductal carcinoma in situ solid type forming less than 25% of the tumor, and clear margins. The tumor was strongly positive for estrogen receptors, weakly positive for progesterone receptors, and HER-2 negative. No lymphatic vascular invasion was present. Eighteen lymph nodes removed by level I/II axillary dissection were free from disease. She then received four cycles of docetaxel followed by whole breast radiation with a boost to the surgical field (total 60 Gy). Finally, she completed five years of hormone therapy with Tamoxifen. According to her records, she was followed by her primary surgeon and medical oncologist for the first five years after surgery and by the primary care physician (PCP), yearly thereafter with clinical breast exams and annual mammograms.

Lymphedema of her right arm was first detected a year after completion of radiotherapy for which she was prescribed a compressive garment and received physical therapy. Since then, she has developed three episodes of cellulitis in her arm, all of which improved with outpatient treatment. Eight years after breast-conserving therapy (BCT), she presented to her PCP with right arm edema and anterior right chest wall pain. Physical examination revealed post-operative changes in her right breast without a palpable mass and mild tenderness to palpation in the right side of her costochondral junction. After the exclusion of cardiopulmonary disease, she underwent a bone scintigraphy, which showed no evidence of skeletal metastatic disease. She was diagnosed with costochondritis and a short course of anti-inflammatory agents was initiated. Her chest wall pain persisted in spite of treatment and two months later she developed right hip pain. At that time, the bone scintigraphy was repeated, pelvic x-rays were done and

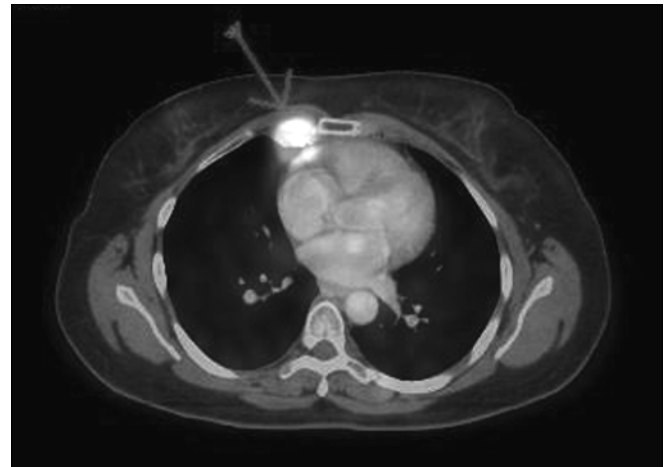


Image 2. 18F-fluorodeoxyglucose positron emission tomography (FDG-PET) with marked avidity likely representing metastatic disease.

blood alkaline phosphatase level drawn. All tests were within normal limits. Her hip pain was attributed to degenerative arthritis and it improved after additional anti-inflammatory agents were prescribed. However, her pain on the chest wall persisted. Over a two year period, she continued to visit her PCP complaining of chest wall pain, having two subsequent bone scans done and repeated alkaline phosphatase levels within normal limits. She was diagnosed with costochondritis plus degenerative arthritis and once again given anti-inflammatory agents. During this period, annual mammograms showed no evidence of recurrent disease and repeated chest x-rays were negative for lung metastasis or active cardiopulmonary disease (Image 1).

She was seen in our lymphedema clinic on September 2008 with the same complaint. Her history and medical record were reviewed. Physical examination showed no palpable mass over the area of chest wall pain. We ordered a PET/CT scan, which revealed a 4.2 x 3.0 cm soft tissue mass between the anterior costochondral junctions of the right sided 3rd and 4th ribs along the internal mammary chain demonstrating marked FDG avidity likely representing metastatic disease (Image 2). Subsequent ultrasound guided fine needle aspiration biopsy was consistent with adenocarcinoma estrogen receptor positive and HER-2 negative. A thoracic CT was ordered for preoperative planning (Image 3). It showed a 3.9 cm mass in the area previously described on PET/CT. The patient was referred to our thoracic surgery service.

On November 2008, through bilateral inframammary incisions, a right anterior chest wall mass resection with partial sternotomy and Gore-Tex reconstruction was performed. The pathology result described a 7.5 x 7.0 x 3.5 cm specimen consisting of a right hemisternotomy; costochondral rib #3, #4, #5, and #6 shaved with overlying pectoral muscle; with a 4.6 x 2.8 cm moderately differentiated metastatic adenocarcinoma invading through the intercostal muscle of costochondral rib #3. Immunostains confirmed the tumor was a metastatic adenocarcinoma originating from the

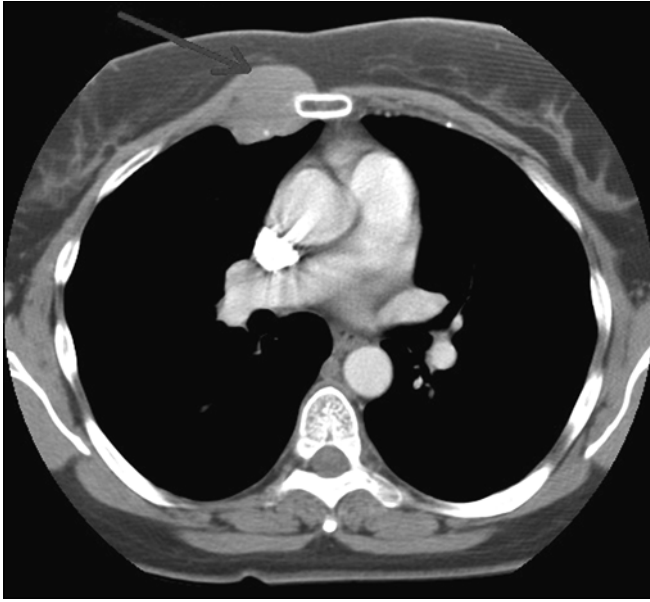


Image 3. Thoracic computed tomography (CT) ordered for preoperative planning showing the likely metastatic lesion.

breast. She developed no post-operative complications. Subsequently, she received additional treatments of chemotherapy and radiotherapy, and has been free of symptoms since then. A PET/CT scan done in June 2009 showed no evidence of disease.

Discussion

Breast cancer recurrence, either loco-regional or distant, is observed in up to 35% of patients within 10 years after treatment (3). Local failure in breast cancer treated with breast-conserving therapy occurs in about 13% of patients at 10 years. The impact of local failure is expressed by a rise in the distant metastasis rate which translates into a reduce survival (2, 4). Thus, early detection is essential to improve patient's survival (2).

Regular clinical examinations and annual mammograms are recommended for the follow-up of breast cancer patients, but there is disagreement on the frequency and duration. Also, the value of clinical examination in detecting loco-regional recurrences is controversial. Most of the recurrences are detected with annual mammograms or by patients themselves, while clinicians on regular visits can detect only one third of the loco-regional recurrences in asymptomatic patients. Thus, some authors claim that frequent visits only decrease the quality of life causing unnecessary distress to the patient (2, 5). In this case, the patient was followed regularly with both annual mammograms and clinical examinations by her surgeon for the first 5 years and the PCP thereafter. It is our institution policy to follow-up patients with annual mammograms and clinical examinations at least for the first 5 years after treatment.

We believe this helps, not only in the early detection of loco-regional and/or systemic recurrences, but also allows to evaluate women for cosmetic outcome and the development of potential morbidities such as lymphedema and pain.

The challenge in this case was the development of a recurrence in the setting of consecutive clinical exams, mammograms, chest x-rays, and bone scans showing no disease. The pain in the costochondral region was probably due to soft tissue and nerve involvement, not to bone metastasis. Therefore, any test result should be correlated with the clinical findings and other imaging studies such as magnetic resonance imaging, computed tomography and/or FDG-PET/CT should be considered if suspicion for recurrence exists. FDG-PET/CT is a sensitive and useful diagnostic tool to detect recurrent breast disease as shown in this case.

Costochondritis, inflammation of the costochondral junctions, causes reproducible localized chest pain and usually resolves without treatment. It can affect women treated for breast cancer, but it is an exclusion diagnosis usually made on clinical grounds after all efforts have been made to rule out recurrence.

The follow-up physician of breast cancer patients has recently, been a debate. In the American Society of Clinical Oncology 2006 update, it was recommended that a physician experienced in cancer surveillance and in breast examination should take care of this group of women (11). In the literature, there are several studies comparing follow-ups by primary care physicians versus specialists. Results showed that follow-up provided by PCPs did not increase the time to diagnosis of a recurrence when compared to specialists (12-14). In the US, the most accepted surveillance program after the treatment of breast cancer is to follow-up regularly with both an annual mammogram and clinical examination by the primary surgeon for the first 5 years and by PCP thereafter (same protocol employed in our institution). Educating PCPs or any other clinician taking care of breast cancer patients, in the topic of recurrence and potential morbidities is essential for the wellbeing of these women. As stated in this case, loco-regional recurrences can be easily missed. It is important to note that the follow-up physician should rule out metastasis first before accrediting symptoms to a non-cancerous etiology, and subsequently delaying treatment.

In conclusion, for a breast cancer patient, follow-up is important to detect loco-regional recurrences as survival may be affected. Persistent symptoms referred by the patient should alert the physician to pursue and vigorously exclude their presence. Careful clinical examination and the competent use of diagnostic tools, should help the clinician taking care of this increasing women population in the early detection of loco-regional and/or systemic recurrences.

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