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### **Title**

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### **Permalink**

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### **Journal**

Proceedings of UCLA Health, 23(1)

### **Authors**

Naghshineh, Sheila

Lorber, Jeremy

### **Publication Date**

2019-04-12

## CLINICAL VIGNETTE

# The Rare Case of the Synchronous Bilateral Invasive Breast Cancer

Sheila Naghshineh, MD<sup>1</sup> and Jeremy Lorber, MD<sup>2</sup>

<sup>1</sup>David Geffen School of Medicine at UCLA

<sup>2</sup>Cedars-Sinai Medical Center

### Introduction

Synchronous bilateral invasive breast cancer (SBBC) is rare, accounting for approximately 2% of newly diagnosed breast cancers.<sup>1,2</sup> The clinical criteria for a synchronous breast tumor varies. The second tumor in the contralateral breast may be a synchronous or a metachronous lesion depending on the definition.<sup>3</sup> While the exact interval between the diagnoses of the two tumors that qualifies as synchronous tumor is controversial, an acceptable interval is under 6 months.<sup>4</sup> The pathophysiology behind the second cancer is also debatable, given that there is evidence to support both a metastatic spread versus two independent primaries.<sup>5-7</sup>

### Case Report

A 74-year-old female, without a personal or family history of breast cancer, was found to have bilateral breast cancer on her annual screening mammogram. Three years prior to presentation, patient who was found to have bilateral masses on mammography, which appeared to be bilateral benign cysts on an ultrasound, notable for two complicated cysts at 9 o'clock in the right breast (7cm from nipple) and 3 o'clock in the left breast (5cm from nipple). Her 6-month-ultrasounds and an annual mammogram showed bilateral cysts, unchanged in size or appearance, until about 2 years later when the complicated cyst at 9 o'clock in the right breast (7cm from nipple) now demonstrated a more antiparallel appearance with more indistinct, microlobulated margins. Subsequent ultrasound guided aspiration showed brown cyst fluid without concern for malignancy. She was advised to have annual breast imaging thereafter. A year later, the annual screening mammogram and ultrasound showed a new focal area of architectural distortion in the right breast and focal asymmetry in the left breast. The bilateral benign cysts remained stable. Additional diagnostic views showed two new masses: an irregular 13 x 12 x 10 mm mass in the right breast at 10 o'clock (6cm from nipple) and an irregular 15 x 13 x 9 mm mass in the left breast at 11 o'clock (5cm from nipple). No axillary lymphadenopathy is noted. She then underwent ultrasound guided core needle biopsy of both masses. The 1.1 cm lesion on the right was consistent with invasive ductal carcinoma (IDC) with lobular features, grade 2, lymph and vascular invasion absent, ER >95%, PR 80%, HER-2 negative (IHC +1), ki 67 1-2%. The 1.1 cm lesion on the left was consistent with IDC, grade 1, lymph and vascular invasion

negative, ER >95%, PR >95%, HER-2 negative (IHC +1), and Ki 67 5-10%.

During her entire course, she denied palpable masses, breast pain, skin changes, or nipple discharge or retraction. She was not of Ashkenazi Jewish descent, and denied family history of breast or ovarian cancer. She had received post-menopausal hormone replacement therapy from age 50 until her cancer diagnosis. Her breast exam did not show skin retraction, nipple distortion or dominant palpable masses. She had no lymphadenopathy.

After consultation with surgery and medical oncologist, patient decided to have bilateral simple mastectomies with bilateral sentinel lymph node biopsies, which confirmed bilateral negative lymph nodes, a left 1.8cm grade 1 IDC at T1c and a right 2.3cm grade 2 IDC at T2, both strongly ER and PR positive, and HER2 negative. She was subsequently started on an aromatase inhibitor.

### Discussion

Despite numerous prior screening mammograms and diagnostic imaging of both breasts, the patient was diagnosed with new bilateral invasive ductal carcinoma. Her diagnosis falls under the category of synchronous bilateral breast cancer. The similar histological features, differentiation, and tumor types argue for intra breast metastasis; however, there have been cases that demonstrated clonally independent events despite similar pathologies and hormonal features.<sup>6,7</sup>

The most common surgery for patients with SBBC is bilateral mastectomy. Even though breast conservation is an acceptable alternative, as was the case with our patient, bilateral mastectomy is the preferred management given the anxiety associated with the diagnosis of SBBC.<sup>2,5,8</sup> Chikaraddi et al (2014) shows that SBBC have a higher likelihood of being triple receptor negative.<sup>9</sup> However, our patient probably has a better prognosis, given both tumors were ER/PR positive. While the results are variable, studies show SBBC survival is equivalent or only moderately lower than unilateral breast cancer.<sup>1,3</sup> It is key to discuss treatment options based on prognostic markers specific to the individual's cancer while also taking into account the

heavy psychological impact of SBBC for most patients.

This patient's case is unusual given that she did not have the typical risk factors for SBBC, such as family history of breast cancer, young age at diagnosis of first cancer, and lobular breast cancer.<sup>2</sup> She did not have BRCA testing given the absence of significant family history or personal history of cancer at a younger age. This case shows the importance of universal screening mammography but also imaging and careful examination of the contralateral breast of those with breast cancer at the time of diagnosis and with surveillance imaging.

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Submitted March 13, 2019