

Carcinoma of the Axillary Tail of Spence: A Case Series

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Abstract. *There is sparse information about cancer in the axillary tail of Spence (CATS). Eight hundred and thirty-nine patients with breast cancer were retrospectively studied for the occurrence of CATS. Ten patients were identified based on detection by imaging studies. A tendency towards stage II or III disease, and estrogen and progesterone receptor-negative neoplasms in the older age (>45 years) group was observed. Management by conservative or radical surgery, with or without postoperative radiotherapy and chemotherapy, effected an estimated five-year disease-free survival rate of 67%, and rates of local failure, regional recurrence as well as distant metastasis of 0%, 10% and 30%, respectively. The treatment of CATS in accordance with modern day standards of care resulted in acceptable prognosis and disease control.*

The axillary tail of Spence, variable in size, is a narrow part of the mammary gland that extends to the axilla. Breast tissue and lymph nodes can be found in the axillary tail region. Carcinoma arising from this particular area is considered to be separate from that originating from the upper outer quadrant of the breast [SEER coded as 50.6 and 50.4 respectively (1)] and is rarely reported. The objective of this study was to describe our experience over the clinical characteristics, management and outcome of patients with carcinoma of the axillary tail of Spence (CATS).

Patients and Methods

Out of the 839 patients documented as having invasive breast cancer between 2001 and 2007, 10 women (0.1%) were diagnosed with CATS. These people were identified from an examination of the multidisciplinary oncology conference case notes and radiological

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Key Words: Breast cancer, axillary tail, breast conservation surgery, mastectomy, radiotherapy, chemotherapy.

reports. This audit of cases is an Institutional Review Board-approved outcome study. For the purpose of this report, CATS represented tumors situated in the axillary tail of Spence (SEER code 50.6) and were reported as Breast Imaging Reported and Data System (2) /BI-RADS 4 or 5 abnormalities on mammographic (Figure 1) and/or ultrasonographic imaging.

Patient follow-up time was measured from the date of breast cancer diagnosis until death or last contact. Survival was estimated according to the product-limit method of Kaplan Meier.

Results

The mean age was 55.2 years (range 44-79 years) and the majority (7/10) of patients were over 45 years old. The clinicopathological characteristics and management are summarized in Table I. In all individuals, physical examination and breast imaging studies failed to reveal tumor in the breasts. Eight women exhibited stage II or III disease at presentation; a woman experienced recurrent tumor of the axillary tail region seven months after mastectomy for stage I breast cancer, while the remaining patient proved to have metastatic disease in the liver and lungs after the diagnosis of CATS was established. There were eight neoplasms negative for estrogen and progesterone receptors, and six tumors were also (*HER-2/neu/c-erbB-2*)-negative. Considering that the tail of Spence is an integral extension of the breast and surgery is the mainstay of treatment, surgical management of the disease (breast conservation therapy or modified radical mastectomy) was left to the surgeon's judgment. Wide excision of the tumor without axillary node dissection, but followed by chemotherapy, was performed in two patients because of recurrent disease or suspected presence of visceral metastases. Whole breast/anterior chest wall (with, in some patients, supraclavicular nodal area) irradiation was usually administered to a total dose of 50 Gy given in 25 fractions. All patients with non-disseminated disease were managed by adjuvant chemotherapy with doxorubicin-containing regimens, and the few women with tumors positive for hormone receptors received adjuvant hormone therapy using either tamoxifen or an aromatase inhibitor.

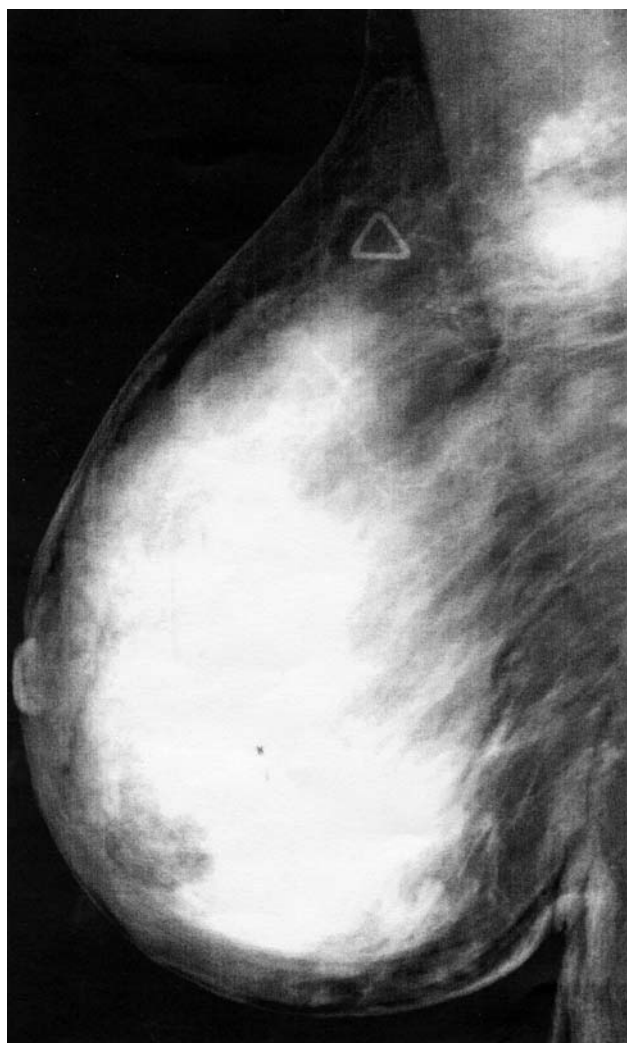


Figure 1. Mammographic abnormality in the axillary tail of Spence.

The estimated 5-year disease-free survival rate was 67% (Figure 2). With a median follow-up period ranging from 40 months to 90 months, of the eight women who survived, seven were cancer-free and one exhibited metastatic disease in the spine. Two women died with systemic neoplastic spread and their periods of survival were 22 months and 42 months. Both women possessed triple receptor-negative neoplasms and one patient's histopathology included N2 axillary metastatic nodes.

Discussion

The axillary tail of Spence is a normal anatomic finding and therefore is not an ectopic breast tissue. Our cases of CATS, depicted as anterior axillary fold neoplasms, are not synonymous with carcinomas of aberrant breast (3-6); the

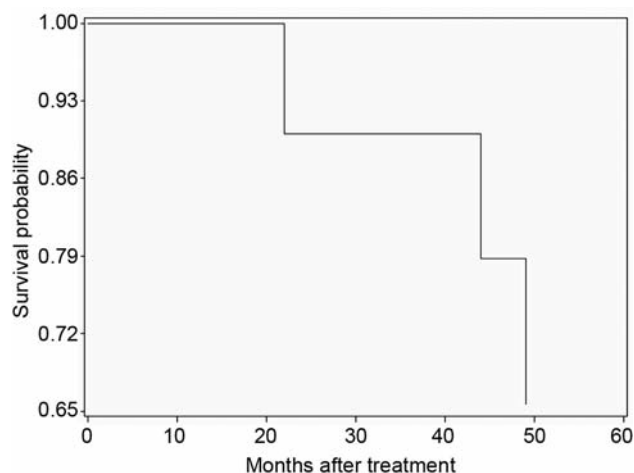


Figure 2. Kaplan Meier 5-year disease-free survival of patients with carcinoma in the axillary tail of Spence.

latter, arising from ectodermal thickening/remnants of failed embryonic mammary ridge resolution, can be found anywhere along the milk line extending from the axilla to the groin.

Memon and Emmanuel (7) cautioned that attempts to remove all breast tissue, including the axillary tail, must not be compromised when mastectomy is practiced as a treatment option in high-risk women (*i.e.* those patients with ductal carcinoma *in situ*). In fact, their two reported cases of post-mastectomy recurrent tumors which appeared in the tail of Spence (similarly noted in one of our patients) highlighted their concern. Furthermore, Williams and colleagues (8) commented that the boundary between the axilla and tail of Spence is arbitrary and that missing potentially positive nodes in the axillary tail could result in understaging and thereby undertreatment of breast cancer.

This study evaluated a cohort of patients with CATS, because these neoplasms are seldom encountered and, hence, information is limited. An account of CATS in the literature has been limited to case reports (7) without documentation of patient outcomes. In two reports (9, 10) by examining the axillary lymph node status in breast cancer patients, metastatic nodal disease was found in the axillary tail, but disease-free survival was not mentioned. Due to the rarity of CATS, no specific guidelines concerning management currently exist. We believe, based on the observed clinical characteristics described here, that treatment of CATS should follow the standards of care recommendations for histologically similar breast cancer of parallel disease stage. Notwithstanding the limitations inherent in any retrospective study, information gleaned from this small-cohort institutional investigation include confirmation of an overall acceptable prognosis for these

Table I. Treatment and clinicopathological findings in patients with carcinoma of the axillary tail of Spence.

Case	Treatment	Findings*
1	MRM + CRT	T3N1 receptor-negative tumor, dense breast on mammogram
2	WE + CRT	Post-mastectomy recurrent, receptor-negative tumor
3	WE + WBRT + CRT	T1N1 receptor-negative tumor
4	WE + WBRT + CRT	T2N1 receptor-negative tumor, ≤45 years old
5	MRM + ACW-SCV RT + CRT	T3N2 receptor-negative tumor
6	WE + WB-SCV RT + CRT	T2N2 receptor-negative tumor
7	WE + CRT	Receptor-negative tumor, suspicious lung/liver metastases on imaging
8	MRM + ACW-SCV	RT + CRT T3N2 tumor
9	MRM + ACW-SCV	RT + CRT T3N2 tumor, ≤45 years old
10	WE + WBRT + CRT	T2N1 receptor-negative tumor, ≤45 years old

MRM, Modified radical mastectomy; CRT, chemotherapy; WE, wide excision (with or without axillary node dissection); WBRT, whole breast irradiation; ACW-SCV RT, anterior chest wall with supraclavicular fossa irradiation; WB-SCV RT, whole breast with supraclavicular fossa irradiation; *TN, disease stage according to the American Joint Committee on Cancer staging system; Estrogen/progesterone receptor-negative=poor hormonal activity as indicated by immuno-histochemistry.

patients who presented with mostly advanced stage, hormone-independent CATS, with favorable effects being achieved by the application of a multimodality aggressive treatment approach – management no different from that of the typical patients with breast cancer.

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Received May 16, 2012

Revised July 20, 2012

Accepted July 23, 2012