

Utility of annual surveillance mammography in patients with treated breast cancer- A single institutional experience from India

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ABSTRACT

Introduction: Surveillance mammography is an integral component of survivorship care in breast cancer as they are at higher risk of developing "Second cancers". This study aimed to find out the number of cases of second breast cancer (ipsilateral recurrence or contralateral primary breast cancer) detected through Annual Surveillance Mammography (ASM) in patients who were treated for primary breast cancer in a tertiary cancer centre in South India

Methods: This was a retrospective study and the case records of all treated patients of breast cancer who underwent ASM from January 2019 to March 2019 were reviewed. Baseline characteristics, treatment details, and mammogram findings were recorded and analysed.

Results: Among the 203 patients included, 126 (62%) were post-menopausal. The median age was 53.5 years (30 years-74 years). The most common stage at presentation was Stage 2 (n=122,62%) followed by Stage 3 (n=54,27%). Most of the patients underwent Modified Radical Mastectomy (MRM) (84%). Most of the patients had BIRADS 1 status (n=192,93%) followed by BIRADS 2 (n=20,10%) BIRADS 4 (n=2,1%) and BIRADS 3 (n=1,0.5%). Two patients had BIRADS 4a lesion which were biopsied (1%) but showed no evidence of malignancy. The same patient group underwent a total of 503 mammograms prior to the current mammogram among which 6 mammograms were abnormal (1.1%). All the patients with abnormal mammograms underwent biopsy and one patient had invasive malignancy (0.2%).

Conclusion: Our results show that the pickup rate of ASM is lower compared to what is reported in the literature. We need larger studies to quantify the benefit of surveillance mammography and to define the optimal timing of initiation, frequency, and the need for individualized strategy.

Key words: surveillance mammography, breast cancer, India

INTRODUCTION

Breast cancer is the most common cancer diagnosed worldwide with an estimated 2.3 million cases in 2020 [1]. With early detection and advances in the treatment there is a significant improvement in survival of breast cancer. Hence it is important to formulate an optimal survivorship strategy for patients with treated breast cancer [2]. Surveillance mammography is considered an integral component of survivorship care in breast cancer as they are at higher risk of developing "Second cancers" which include ipsilateral local or regional recurrence and contralateral primary breast cancer [3]. The estimated incidence of contralateral metachronous breast cancer is 0.3%-1% annually as per the previous studies. Randomized trials clearly showed that mammography as a screening modality reduces breast cancer-related mortality for women with age 40 years-74 years [4-5]. The widespread use of surveillance mammography is based on these trials and some of the observational studies conducted in surveillance settings [6]. These studies showed that detection of second cancers with mammography before the onset of symptoms can lead to a favourable outcome. American Society of Clinical Oncology guidelines recommend annual mammography but do not specify the timing for initiation of mammography [7]. Similarly, NCCN guidelines also endorse annual mammography starting 6 months-12 months after completion of radiation. But the optimal timing for initiation and frequency of mammography is yet to be strictly defined. A study from US showed that there is a decrease in the use of surveillance mammography in breast cancer survivors raising concerns about the long term compliance of annual screening [8]. In resource-limited countries like India, advising routine annual surveillance mammogram for all patients with treated breast cancer can be challenging because of multiple reasons. Patients can have difficulty in accessing centres with mammogram facilities and also it can increase the burden in high volume centres resulting in increased waiting times and in diagnostic delays [9]. Cost effectiveness of annual surveillance mammography is also uncertain especially in a low middle income country [10]. We studied the utility of annual surveillance mammography in our centre which is a tertiary cancer centre located in South India.

MATERIALS AND METHODS

This was a retrospective study approved by the Institutional Review Board. Case records of all treated patients of breast

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cancer who underwent annual surveillance mammography from January 2019 to March 2019 were reviewed. Annual surveillance mammography, which is defined as routine mammography ordered annually without any evidence of second tumour on physical examination. Details of the initial tumour including baseline characteristics, stage, histology, and treatment details were recorded. Details regarding follow up and mammogram findings were also collected. Primary objective of the study was to find out the number of cases of second breast cancer (ipsilateral recurrence or contralateral primary breast cancer) detected through annual surveillance mammography. Secondary objectives were to study the mammogram abnormalities in patients with treated breast cancer and to study the pathological and immune histochemical features of second breast cancers. The data was tabulated electronically in Microsoft Excel and analysed by using the software IBM SPSS 20.0 version (IBM Corp. Released 2011. IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp). The demographical details of the participants were expressed in frequency and percentage.

RESULT

Baseline and treatment characteristics

A total of 203 patients were included in the study. Among our patients, 126 patients (62%) were post-menopausal and 77 were premenopausal (38%). Median age was 53.5 years (30 years-74 years) (Table 1).

Initial stage of breast cancer details was available for 197 patients. Most common stage at presentation was Stage 2 (n=122,62%) followed by Stage 3 (n=54,27%) and Stage 1(n=21,11%). Most of the patients underwent Modified Radical Mastectomy (MRM) (n=172, 84%) and only 31 patients underwent breast conservation surgery. Majority of the patients received chemotherapy either as adjuvant or neo-adjuvant (n=186,92%). One thirty-nine patients (69%) received adjuvant radiation therapy.

Mammogram findings

All the patients included in the study underwent annual surveillance mammogram. Median number of surveillance mammograms prior to the current mammogram was 3 (range is from 0 to 6) Most of the patients had BIRADS 1 status (n=192,93%) followed by BIRADS 2 (n=20,10%)

BIRADS 4 (n=2,1%) and BIRADS 3 (n=1,0.5%). Two patients had BIRADS 4a lesion which were biopsied (1%). Both patients did not have shown any evidence of malignancy. The same patient group underwent a total of 503 mammograms prior to the current mammogram among which 6 mammograms were abnormal (1.1%). All the patients with abnormal mammogram underwent biopsy and one patient was found to have invasive malignancy (0.2%). The patient with invasive malignancy underwent surgery.

DISCUSSION

Annual surveillance mammography is recommended by all guidelines but there is no randomized study to support this practice. Though this strategy is supposed to improve the survival there can be harmful effects too [11]. In this study we analysed 203 patients who underwent annual surveillance mammogram in a high volume cancer care centre in South India. Majority of the patients were postmenopausal, had stage II disease and had receptor positive disease. Most of our patients underwent modified radical mastectomy like in other Indian studies [12]. All the patients in the study group underwent mammography as part of annual surveillance. Majority of our patients had early-stage disease as those with advanced disease are more likely to develop systemic metastasis earlier itself. Our study showed that the pickup rate of second cancers with annual screening mammography was 0.2%, which is lower than reported in western studies.

Though mammographic abnormalities are well described post treatment only a minority of our patients had abnormal mammogram [13]. Many of the earlier studies showed that 0.5%-1% of the patients can develop ipsilateral recurrence or contralateral primary [14]. In a meta-analysis of 13 studies with 2,263 patients, Lu WL et al reported an absolute breast cancer mortality reduction of 17%-28% if the recurrence was found by surveillance mammography versus clinical detection [5]. In our study, among the 203 patients who underwent surveillance most of the patients had normal mammogram. Only 2 patients had BIRADS 4 lesions, but biopsy did not show any evidence of malignancy. In a study by Houssami et al. with 58,870 screening mammograms in 19,078 women with a history of early-stage breast cancer, incidence of abnormal mammogram was 2.3% which was almost double that of our study [6].

Tab. 1. Demography and Baseline characteristics

	Baseline Characteristics		Number (%)
Side of the Tumour	Right		111 (54.5%)
	Left		91(45%)
	Bilateral		1(0.5%)
Histology	IDC		196 (96%)
	Metaplastic		2 (1%)
	Mucinous		1 (0.5%)
	Papillary		3 (2.5%)
Grade	Grade 1		19 (9%)
	Grade 2		98 (48%)
	Grade 3		46 (23%)
	Not available		40 (20%)
ER/PR Status	Positive		125 (61%)
	Negative		74 (36%)
	Not available		4 (2%)
Her2 Neu	Positive		76 (37%)
	Negative		106 (52%)
	Equivocal		17 (9%)
	Not available		4 (2%)

Also, the same study reported a cancer detection rate was 6.8 per 1000 mammograms. If we take all the mammograms underwent by our study population, one patient was detected to have invasive cancer accounting for one in 704 or 1.4 in 1000. This is lower compared to other studies. The exact reason for this difference needs to be studied but it is well known that there can be racial differences in the pattern of recurrence in breast cancer [15].

Limitations of our study include the small sample size and retrospective design. Also many of the factors which may affect the pickup rate like breast density could not be studied. But as per our knowledge this is the first study on surveillance mammography from our country. Our preliminary results show that the pickup

rate of annual surveillance mammography is lower compared to what is reported in the literature. We need larger studies to exactly quantify the benefit of surveillance mammography and to define the optimal timing of initiation, frequency and individualization of the strategy based on patient and disease related factors.

CONCLUSION

Our results show that the pickup rate of ASM is lower compared to what is reported in the literature. We need larger studies to quantify the benefit of surveillance mammography and to define the optimal timing of initiation, frequency, and the need for individualized strategy.

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