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## Radiotherapy in the management of early breast cancer in Ibadan: outcome of chest wall irradiation alone in clinically nodes free axilla

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### Summary

The study was carried out to identify the group of patients with early breast cancer {stage I and II} after surgery in which chest wall irradiation alone was given without lymphatic irradiation thus reducing morbidity and also creating room for more patients on the available limited treatment facility. 92 patients with histologically confirmed early breast cancer that attended Radiotherapy clinic between June 1995 and May 1998 that satisfied selection criteria were studied. They all received External Radiotherapy to the chest wall, mediasternum inclusive and breast if still in-situ. All also received cytotoxic chemotherapy. Majority of the patients 67 {84.8%} were recurrence free in 2years while 12 {15.2%} had recurrent disease, the recurrent sites were axilla 4 {5.06%}, chest wall 3 {3.80%} and supraclavicular 2 {2.52%}. Average time to recurrence was 3-12 months. In view of majority being recurrence free, chest wall irradiation alone in early breast cancer {stage I and II} could be encouraged, thus creating access to treatment for more patients in centers like ours with limited therapy facilities.

**Keywords:** *Early breast cancer, chest wall irradiation, recurrence*

### Résumé

Une étude a été faite pour identifier le groupe de patients avec le cancer de sein précoce (stage I & II). Après chirurgie pendant laquelle la cage thoracique était irradiée sans inclure les lymphatiques, ainsi réduisant la souffrance et permettant aussi à plus de patients d'avoir accès au traitement dont les facilités sont réduites. 92 patients confirmés histologiquement avec du cancer de sein précoce qui ont subi la radiothérapie entre juin 1995-mai 1998 étaient recrutés en fonction des critères de sélection. Tous avaient reçu la radiothérapie externe de la cage thoracique, le médiastère inclus et seins. Ils étaient présents et ont reçu un traitement cytotoxique de chimiothérapie. La majorité de patients 67 (84.8%) étaient guéris après 2 ans alors que 12 (15.2%) ont repris la maladie après traitement. Les points de récurrence étaient l'axille 4 (5.06%), poitrine 3 (3.08%) et le supraclavicule 2 (2.52%). Le temps moyen de récurrence était de 3-12 mois. Étant donné que la majorité était guérie, l'irradiation seule de la cage thoracique étendue comme traitement du cancer de sein précoce (stage I & II) pourrait être encouragée, ainsi créant l'accès aux soins à plus de patients dans les centres ayant des facilités limitées comme les nôtres.

### Introduction

Delivering a high dose irradiation to lymphatic drainage areas is a contributory factor to the morbidity of treatment after local excision or modified radical mastectomy and a high dose radiotherapy for early breast cancers {Stages I and II} may detract significantly from the cosmetic result. Several reports have demonstrated the inability of lymphatic irradiation to influence the

survival of patients with early breast cancer, this therefore supports the selective avoidance of the regional radiotherapy in a proportion of patients [1,7,8]. However patients with high risk of regional recurrence are still recommended to have lymphatic irradiation. In patients where full axillary dissection has been done and the nodes are negative, no lymphatic irradiation is given. In patients where limited axillary dissection was done, with nodes being negative, a policy is therefore necessary to identify those that may require just a watch policy. In this environment majority of patients have limited dissection and information about the surgery is not always available. Hence this study was designed to identify those early breast cancer cases that may require only chest wall irradiation without lymphatic irradiation in spite of the limited information about axillary surgery but whose axillary nodes are clinically or histologically negative

The conventional radiotherapy treatment involved the use of 5 fields to cover lymphatic drainage and chest wall viz 2 tangential fields for chest wall, 2 fields for supraclavicular region [anterior and posterior] and a field for the mediasternal group of lymph nodes. The setting up and actual treatment could be laborious thus time consuming limiting the number of patients that will be attended to. Limited facility {Only 1 cobalt machine} is a major constraint in our center thus resulting to a long waiting list.

Breast cancer constitutes the majority of patients seen in our department, for the patients studied, 2 tangential fields covering the chest wall, the mediasternum and the breast when only lumpectomy was done were used. The rate of local and distant recurrences were studied.

### Materials and method

Patients with early breast cancers post lumpectomy or modified radical mastectomy with histological confirmation were recruited between June 1995 and May 1998. Criteria of selection included

1. History of axillary dissection of nodes.
2. Nodes clinically or histologically negative.
3. Ipsilateral supra-clavicular, contra-lateral breast and axilla were clinically free of disease.

All patients had chest x-rays, Abdominal ultrasound, full blood counts and electrolytes and urea levels and liver function test done prior to external radiotherapy to rule out any evidence of distant spread. Procedure was well explained to patients and their consents were taken.

The radiotherapy involved delivery of photon beam from CO-60 machine by tangential fields to the chest wall, mediasternum and breast tissue if in situ extending from 3cm lateral to the midline to the axillary line. Dose of 45Gy- 50Gy over 4 - 5 weeks were delivered with a boost of 10Gy to the scar site, given as 2Gy per fraction over 5 days. Electron beam would have been preferred for this purpose, but due to inavailability, photon beam from CO-60 was applied tangentially. No irradiation was given to the Ipsilateral supraclavicular fossa.

Patients were seen on follow-up visits in the clinic, initially at 6 weeks thereafter every 3 months after treatment. During visits clinical examination is done, any suspected recurrent mass is subjected to fine needle cytology, chest radiograph is also taken. Consecutive patients that satisfy these criteria were selected.

All the pre-menopausal patients received cytotoxic chemotherapy in form of cyclophosphamide, methotrexate, and 5-fluorouracil [CMF]. Or cyclophosphamide, Adriamycin and 5-fluorouracil [CAF] plus Tamoxifen while the post menopausal patients received Tamoxifen only in addition to the external radiotherapy. The patients were followed up for an average of 2-3 yrs.

## Results

Ninety-two patients were selectively recruited to the study based on earlier mentioned criteria between June 1995 and May 1998, however only 79 completed the external radiotherapy regimen prescribed.

Age ranged from 23-76 yrs

Mean Age - 49.4 yrs

Mean Follow up time was 8 months

**Table 1:** Showing number of recurrences

	Number	%
Recurrence	12	15.2
No recurrence	67	84.8
Total	79	100

**Table 2:** Showing types of recurrence

Type	Number	%
Axillary/oedema of arm	4	5.06
Chest wall	3	3.80
Metastasis to spine (Thoracic)	1	1.26
Pulmonary metastasis	1	1.26
Pleural effusion	1	1.26
Supraclavicular node	2	2.53
Total	12	15.2

**Table 3:** Showing time to recurrence

Type of recurrence	Average time to recurrence
Axilla recurrence/oedema	12 months
Chest wall	12 months
Metastasis to spine	6 months
Pulmonary metastasis	5 months
Pleural effusion	3 months

**Table 4:** Showing age group

Age group (years)	Number	%
20-29	2	2.53
30-39	20	25.3
40-49	19	24.11
50-59	21	26.5
60-69	12	15.2
70-79	4	5.10
80-89	1	1.26
Total	79	100

## Discussion

Cancer of the breast is the commonest female malignancies in our environment and therefore accounted for larger proportion of patients presenting for radiotherapy. High dose lymphatic irradiation has been shown to be a contributory factor to the morbidity of treatment of breast cancer. Apparent inability of lymphatic irradiation to influence the survival of patients in early breast cancer supports the argument for selective avoidance of regional radiotherapy [3]. A study at Gustave- Roussy of 356 patients treated with conservative surgery plus irradiation noted that local recurrence developed in 26% of patients with involved nodes compared with 6.5% of patients without nodal involvement.

The 3 yrs survival rate was 87% for level 1 positive nodes 75% for those with level 2 and 36% for those with level 3 [6]. Axillary recurrence after complete dissection as reported by Dayforth *et al* ranged from 1-2 % [8]. It was also reported that 20-30% of patients with a clinically positive axilla have no histologic evidence of nodal disease [1,2,4,5].

A deliberate avoidance of irradiation of the axilla in patients with axillary dissection was studied by Gerard and associates [9]. Out of 195 patients with stages 1 and 2 treated with conservative surgery and breast irradiation 1.2% probability of axillary recurrence was reported.

Clark and associates [10] reported similar breast recurrence rate of 9% and 12% whether the axillary lymph nodes were irradiated or not respectively. Therefore based on reports of earlier workers on the effects of lymphatic irradiation on lymphatic control, complications, cosmesis, survival and the effects of withholding lymphatic irradiation, it was recommended that lymphatic irradiation should be reserved for those with high risk of regional recurrences, these are those with histologically positive nodes in axilla post surgical clearance. It was this that prompted the need for the study among our patients.

Out of the 79 patients treated without lymphatic irradiation only 12 (15.2%) had regional recurrence as shown in table 1. About 85% of these group of patients would have unnecessarily been irradiated. Table 2 showed the types of recurrences 4[5.06%] patients had recurrence in the axilla and only 2 [2.53%] patients recurred in the supraclavicular fossa, these figures are in agreement with the findings of earlier workers.

Radiotherapy planning for breast cancer while involving the lymphatics could be cumbersome and the actual setting up and treatment on the radiotherapy machine could be time consuming, this posed a major concern to a center like ours where only one functioning machine is available to numerous cancer patients of different histologies. This approach of treating only breast and chest wall in early breast cancers without the lymphatics has created more treatment spaces and time to accommodate more patients on our only functioning CO-60 machine.

More patients could have been included for this study but for the lack of information about surgery done and status of the axillary nodes dissected, whether they were positive or negative for metastasis. This is true mostly of patients referred from outside university college hospital.

Those few patients that had recurrences came up within 6 months of treatment and were given palliative radiotherapy to the affected region with considerable control achieved. Based on this report, it may be considered as a policy for early breast cancer patients having limited axillary dissection whose nodes are histologically and clinically negative to be eligible for careful watch policy for the regional lymphatics following local excision and high dose radiotherapy to the primary disease.

This also spare the patients of already documented complications of irradiation of lymphatics such as ,lymphoedma, limited shoulder movement and brachiooplexy .

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