

A Clinical Study on Axillary Lymphadenopathy in Breast Disorders

Chandrashekar D¹, Vinay HG²

Author's Affiliation: ¹Assistant Professor, ²Associate Professor, Department of General Surgery, Vydehi Institute of Medical Science and Research Centre, Whitefield, Bengaluru, Karnataka 560066, India.

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Abstract

Aims: The aim of this study is the axillary lymphadenopathy in breast disorders. This study categorizes the various disorders of the breast which involve axillary lymph nodes and their incidences.

Materials and Methods: A three years retrospective study was performed at the General Surgery department at Vydehi Institute of Medical Science and Research Centre, Bengaluru. A total of 225 cases were included in this study. Demography, Pre-operative and postoperative data were recorded, including post-operative complication.

Results: Breast carcinoma is the leading disorder which constitutes about 34.3% of the cases. Out of 225 cases, 72 cases belonged to carcinoma breast. The next disorders are breast abscess and fibroadenomas which involve axillary lymph nodes, about 25%. The breast abscess cases are 39 and fibroadenosis are 36 cases out of 225 cases. Paget's disease accounts for 1.3% (3 cases out of 225). The remaining benign disorders constitute 40%.

Conclusion: In our study, the carcinoma breast (About 1/3rd of the cases-34.3%) is the major disorder that involves the axillary lymph nodes among other various disorders of the breast. Next are breast abscess and fibroadenosis, which constitutes 1/3rd of the total breast disorders (Breast abscess 17.3% and fibroadenosis 16%).

Keywords: Breast cancer; Axillary lymph nodes; Axillary tail of Spence; Axillary lymphadenopathy.

Introduction

In the female, most common breast disorders are non-cancerous. Among them are Fibroadenoma, Fibroadenosis, and Breast abscess, Acute Mastitis, Chronic Mastitis, and Cysto-sarcoma-phylloides. Breast cancer has ranked number one cancer among Indian females as high as 25.8 per 100,000 women and mortality 12.7 per 100,000 women. Data reports from various latest national cancer registries were compared for incidence and mortality rates¹. Breast cancer is the most common female cancer worldwide representing nearly a quarter (25%) of all cancers with an estimated 1.67 million new cancer cases diagnosed in 2012.¹

In the case of axillary nodes involvement of breast conditions breast carcinoma counts a lot. The axillary nodes are also involved in other malignancies like - Carcinoma Stomach in the advanced stage, called, Irish node, which involves the anterior group of axillary nodes.

The core study of this article is axillary nodal involvement in breast disorders; hence knowledge on axillary nodes is essential.

These are broadly divided into two groups.

1. Drainage from the glandular tissue of the breast.
2. Remaining from overlying skin excluding nipple and areola.

The glandular tissue drains about 70% to the axillary nodes which pass through the "tail of Spence". Spence's tail (Spence's tail, axillary process, axillary tail) is an extension of the breast tissue that reaches into the axilla. Actually, it is an extension of the breast's upper outer quadrant. Via

Corresponding Author: Chandrashekar D, Assistant Professor, Department of General Surgery, Vydehi Institute of Medical Science and Research Centre, Whitefield, Bengaluru, Karnataka 560066, India.

E-mail: drchandrashekar9@gmail.com

a gap in the deep fascia called Langer foramen, it passes into the axilla. The lymphatics from the nipple and areola communicate with the sub-areola lymphatic plexuses of supply and reach the axillary nodes through this foramen langer.

About 20% of lymphatics of the glandular tissue of the breast pass to the internal mammary nodes which lie along the same-named vessels. The remaining (10%) lymphatic to the nodes goes to the glands around the breast.²

The cutaneous lymphatics is passed radial direction like a spoke of the wheel and end in the surrounding lymph nodes. These lymphatic communicate across the midline with those of the opposite.³

The mammary gland gets blood supply from three sources.³

Materials and Methods

A three years retrospective study was performed at the General Surgery department at Vydehi Institute of Medical Science and Research Center, Bengaluru, which is a tertiary care centre. Demography, Pre-operative and postoperative data were recorded, including post-operative complications.

Results

Breast disorders which are involved in axillary lymphadenopathy are classified into two categories in this study,

1. Breast carcinoma
2. Benign breast disorders

Breast carcinoma

In this study the various breast disorders which involve axillary nodes and their incidences are tabulated as under. (Table 1)

Table 1: The breast disorders which involves axillary nodes.

Sl. No.	Diseases	Total cases out of 225	Percentage
1	Carcinoma breast	72	34.3
2	Breast abscess	39	17.3
3	Fibrocystadenosis	36	16
4	Duct papilloma	12	5.3
5	Acute mastitis	12	5.3
6	Chronic mastitis	9	4
7	Cysto-sarcoma phylloides	6	2.6

8	Breast cysts	6	2.6
9	Galactocele	6	2.6
10	Periductal mastitis	3	1.3
11	Mammary fistula	3	1.3
12	Tuberculous mastitis	3	1.3
13	Paget's disease	3	1.3
Total cases		225	100

Regarding carcinoma breast

The following findings are come to light in this study. (Table 2)

Table 2: Age distribution.

Sl. No.	Age range	No. of cases	% of cases
1	18-29	10	14
2	30-39	18	25
3	40-49	24	33
4	50-59	14	19
5	60 and above	6	9
Total		72	100

Table 3: Breast involvement.

Sl.No.	Breast involvement	No. of cases	% of cases
1	Left breast alone	36	50
2	Right breast alone	35	48
3	Both breasts	1	2
Total		72	100

Table 4: Involvement of each quadrant.

Sl.No	Quadrants	No. of cases	% of cases
1	U.O.Q	41	57
2	U.I.Q	12	17
3	L.I.Q	8	11
4	L.O.Q	7	10
5	Nipple and areola	4	5
Total		72	100

Table 5: Breast feeding and nulliparity.

Sl.No.	Feeding status	No. of cases	% o cases
1	Present	18	25
2	Absent	28	39
3	Nulliparous	26	36
Total		72	100

Table 6: Menarche and carcinoma.

Sl. No.	Age of menarche	No. of case	% of cases
1	11	19	26
2	12	17	24
3	13	16	22
4	14	14	19
5	15	6	9
Total		72	100

Table 7: Diet and carcinoma.

Sl. No.	Diet status	No. of cases	% of cases
1	Normal diet	28	39
2	Diet rich in fat	48	61
	Total	72	100

Table 8: Alcohol and carcinoma.

Sl. No.	Alcohol status	No. of cases	% of cases
1	Alcoholics	40	55
2	Non-alcoholics	32	45
	Total	72	100

Table 9: Smoking and carcinoma.

Sl. No.	Smoking status	No. of cases	% of cases
1	Smokers	12	17
2	Non-smokers	60	83
	Total	72	100

Table 10: Oral contraceptive and carcinoma.

Sl. No.	OCP Status	No. of cases	% of cases
1	Present	13	18
2	Absent	59	82
	Total	72	100

Table 11: Family History.

Sl. No	Family history	No. of cases	% of cases
1	Present	8	11
2	Absent	64	89
	Total	72	100

Table 12: Previous history of BBD.

Sl. No.	BBD status	No. of cases	% of cases
1	Present	11	15
2	Absent	61	85
	Total	72	100

Table 13: Stages of reporting for treatment.

Sl. No.	Stage	No. of cases	% of cases
1	II	22	30
2	IIIa	11	15
3	IIIb	34	47
4	IV	5	8
	Total	72	100

Table 14: Berg's surgical level and nodal involvement.

Sl. No.	Berg's level	No. of cases	% of cases
1	I	35	48.6
2	I and II	17	23.6
3	I, II and III	10	13.8
4	I and III	4	5.5
5	II	4	5.5
6	III	1	1.3
7	II and III	1	1.3
	Total	72	100

The benign breast disorders (BBD)

All nonmalignant breast disorders, including benign cancers, trauma, mastalgia, mastitis, and nipple discharge, include benign breast disease. The benign breast disorders and diseases (BBD) are at least 10 times more common than breast cancer in the West⁴ and mastalgia is the most common problem encountered in both general practice and in-hospital surgical out-patient settings.^{5,6} References to BBD, in particular to mastalgia, are scant in Indian surgical literature. Indian literature tends to profile the spectrum of BBD only by histopathological examination.^{7,8} Mastalgia and fibroadenosis are widespread among women in the reproductive age group. Breast pain among women, with or without lump is a common complaint and a cause of significant anxiety and fear of breast cancer.⁹ Annually 200,000 breast disorders are identified¹⁰ and it is noted that most of the palpable lesions are benign.¹¹ In the reproductive age group, nearly half of women suffer from Benign Breast Diseases (BBD).¹²

In our study, the BBD accounts for 65% of which are involved axillary nodes. Among them, breast abscess and fibroadenosis constitute the majority. (Table 1)

Fibrocystic breast disease/Fibrocystic disease of Brodie is a non-carcinogenic breast condition, which presents as a diffuse lump and is connected with hormonal changes (menstrual cycle).¹³⁻¹⁷ Particularly in their conceptional age, many women experience ill effects of fibrocystic disease. In menopausal women, fibrocystic diseases are rare. In either or both breasts, fibrocystic changes may happen.

Inflammatory, epithelial, and stromal proliferation, neoplasm, and developmental anomalies can be listed as benign diseases. Benign breast diseases are more prevalent as compared to malignant, as seen throughout the world.¹⁸ Fibroadenoma occurs more commonly in the population, accounting for almost half of all benign disease cases. The occurrence of benign lesions is normal in the fourth and fifth decades of life, reaching its peak in the second decade.¹⁹

A rare type of tuberculosis is breast tuberculosis. In diagnosing this easily treatable disorder, the experience of its complex clinical appearance and diagnostic modalities helps. Tuberculosis of the breast is essentially a female illness. This study reported 3 cases out of 225 cases (1.3%) all were below 30 years of age and were from rural areas. FNAC was found to be a sensitive tool of diagnosis;

however, cases were diagnosed with a biopsy. ATT has remained the mainstay of surgical intervention care as and when necessary. While it's not difficult to diagnose, one should know when to assume. When confirmed, the result of treatment is often rewarding.

Axillary lymphadenopathy

One of the most significant prognostic markers for breast cancer is axillary lymph node status, and the detection of nodal metastases is a crucial factor in recommending postoperative adjuvant chemotherapy.²⁰ To improve the prognosis, in the case of breast carcinoma, SLNB, breast mammogram, and tumor marker plays a vital role to conserve the breast and to improve the survival rate.

Multiple analyses revealed four independent predictors of node positivity:

- Tumour size (p-value equals 0.0001),
- Presence of lymphovascular invasion (p-value is less than 0.0001),
- Tumours with histology other than invasive ductal or lobular carcinoma (p-value equals 0.04), and
- Presence of progesterone receptors (p-value equals 0.05).

Discussion

In carcinoma breast, axillary lymph node involvement is the most important determining factor in recommending adjuvant chemotherapy for patients with breast carcinoma.²¹ Among patients, affected by breast cancer, younger patients have a higher incidence of axillary nodal metastases than older patients.^{22,25} A significant prognostic factor is the presence of axillary lymph node metastases. Sentinel lymph node biopsy (SLNB) is an emerging method for the staging of carcinoma. The berg's surgical nodal level is also equally important to stage the disease and predict the survival rate of the woman.

Widespread use of mammography has resulted in a marked increase in early detection of breast cancer, improvement in therapy, and declining mortality.²³ In India, cancer breast is the most common cancer among women.²¹ Axillary lymph node dissection mastectomy (ALND) is the preferred procedure for breast carcinoma. The dissection provides accurate

prognostic information as well as excellent local control and improves the survival rate in the node-positive group.²⁴

Compared to ILC, tubular and mucinous carcinoma, IDC demonstrated a high incidence of axillary metastasis. This highlights the argument that it is possible to use the histological tumour type as a useful marker for predicting axillary metastasis.²⁶

This research showed that there was a strong correlation between tumor histology and axillary metastasis. There was a risk of healthy axillary lymph nodes in Grade II and III tumors. (Table 14) The value of histological grade as a prognostic factor in breast carcinoma has been analyzed in numerous studies. It has been shown that patients with high-grade tumors treated by mastectomy have a significantly high frequency of lymph node metastases with four or more positive nodes and more systemic recurrences, and more of such patients die of metastatic disease compared to patients with low-grade tumors.^{27,28}

The ER and PR-negative status findings were significantly correlated with a low axillary node metastasis risk. The existence of steroid hormone receptors (ER and PR) is currently a relatively weak prognostic factor for breast cancer patients, but these receptors are the best predictors of hormone therapy response. Most of the tumors are obviously receptor positive.²⁹ The positive expression for ER and PR was significantly correlated with histological grade, mitotic score, and nuclear pleomorphism.³⁰ Patients undergoing sentinel lymph node biopsy (SLNB) have been reported in one of the series to demonstrate that the prevalence of SLN metastases has an inverse association with the absence of progesterone receptors.³¹ The ER and PR levels do not contribute to the prediction of lymph node metastases, since there was no correlation with node positivity.³²

In this study, it was observed that breast carcinoma is the leading disorder which constitutes about 34.3% of the cases. Out of 225 cases, 72 cases were belonged to carcinoma breast. The next disorders are breast abscess and fibroadenosis which involves axillary lymph nodes, about 25%. The breast abscess cases are 39 and fibroadenosis are 36 cases out of 225 cases. The paget's disease accounts for 1.3% (3 cases out of 225). The remaining benign disorders constitute 40%. (Table 1)

In this study, it was observed that the tumor diameters equal to or greater than 5 cm with positive axillary nodes account for 96.3%, but the tumors size

less than 2 cm with no nodal involvement. It was discovered that tumor diameter and lymph node status function as separate but additive prognostic indicators. As tumor size increased, irrespective of lymph node status, the survival rate decreased, and as lymph node involvement increased, irrespective of tumor size, the survival status also decreased. A linear relation was found between the diameter of the tumor and the number of cases with positive involvement of the lymph node. (Table 14)

Conclusion

Breast cancer is the major cause of morbidity and mortality among females ranking number one among female cancers in India. In this study, the carcinoma breast accounts for 34.3% which causes axillary lymphadenopathy. Next are breast abscess and fibrocystadenosis, which constitutes 1/3rd of the total breast disorders (Breast abscess 17.3% and fibrocystadenosis 16%). The remaining are constitutes 1/3rd to benign breast disorders that cause axillary lymphadenopathy. As far as breast carcinoma is concerned both the breast are afflicted equally and bilateral involvement accounts for 2% only. Regarding quadrants, the upper and outer quadrant mostly involved in this study. Axillary metastasis can be predicted by histological tumor type, histological grade, and ER-PR status, but in our study, there was no correlation between patient age and tumor size with axillary metastasis. But two of the most important prognostic indicators for breast cancer are tumor size and extent of axillary lymph node involvement. The berg's surgical level plays a vital role in the staging of the disease, prognosis, and determine the survival rate. To improve the prognosis, in the case of breast carcinoma, SLNB, breast mammogram, and tumor marker plays a vital role to plan the management to conserve the breast and to improve the survival rate.

Abbreviation

ALN-Axillary lymph nodes
 BBD-Benign Breast disorders
 SLNB- Sentinel lymph node biopsy
 FNAC- Fine needle aspiration cytology
 ATT- Anti tubercular treatment/therapy
 ALND-Axillary lymph node dissection
 DCIS- Ductal carcinoma in situ
 IDC- Intra ductal carcinoma

ILC- Intra lobular carcinoma
 ER- Estrogen receptor and
 PR- Progesterone receptor
 PMS- Post menopausal syndrome

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