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Research Article

**DETECTION OF THE AXILLARY LYMPH NODE
METASTASES AMONG PATIENTS SUFFERING FROM
BREAST CARCINOMA UTILIZING BLUE DYE**¹Dr Abdul Ghaffar Arain, ²Dr Madiha Shoaib, ³Dr Raja Muaaz Ahmad¹Department of Surgery DOW University of Health Sciences and Civil Hospital Karachi²Allied Hospital Faisalabad³Independent Medical College Faisalabad**Abstract:**

Objective: The aim of this study is to find out the diagnostic preciseness of the Methylene Blue Dye to identify the lymph node metastases among patients suffering from breast carcinoma by utilizing the gold standard of histopathology.

Methodology: This was a quasi-experimental research work conducted at Civil Hospital Karachi from March 2016 to December 2018. Ethical committee of the institute gave the permission to conduct this research work. Total eighty-five patients with confirmed carcinoma with biopsy were the part of this research work. We infiltrated the 1.0% methylene blue dye in the peritumoral region of the infected breast. We called the blue stained node as the sentinel lymph node which came under recognition and we meticulously dissected it out. We send the sentinel lymph node and mastectomy with the sample of axillary clearance for histopathology in 2 different bottles and then we carried out the comparison of the histopathology report.

Results: There were positive Axillary Lymph Nodes for carcinoma in sixty-one patients (71.70%) out of total 85. Total 2 patients were present with the negative sentinel lymph node while having positive non-sentinel lymph node (false-negative). In 3 patients of this research work, there was only involvement of sentinel lymph node but there was no involvement of axilla (False-positive). The preciseness, sensitivity and specificity were 94.10%, 96.8% and 86.36% correspondingly.

Conclusion: Methylene Blue Dye approach is very credible and secure identification modality for the identification of the sentinel lymph node in the patients suffering from breast carcinoma due to its high preciseness.

Keywords: Breast Carcinoma, Sentinel Lymph Node, Methylene Blue Dye, Preciseness, Meticulously, Sensitivity, Specificity, Nodes.

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INTRODUCTION:

The most common factor among the females of the whole world is breast carcinoma containing 23.0% of all cancers among females. In our country Pakistan, it is responsible for 23.0% of all cancers and 41.0% of all female cancers. The gold standard for the identification of the breast cancer is histopathology. The axillary lymph nodes status is an important calculation to manage the consequent adjuvant therapy of this complication and it is very significant prognostic factor. Sentinel Lymph Node biopsy is used to evaluate it, which is elaborated as lymph node that obtains lymphatic drainage from the carcinoma in early stage, so there are high chances for this node to have metastatic breast carcinoma. The biopsy of the sentinel lymph node is least invasive method of surgery to stage axilla and it is also the reason behind the reduction of the axillary clearance morbidities. Krag for the very first time in 1993 reported the sentinel lymph node biopsy with the utilization of the radio colloid procedure, and blue dye procedure was used by Giuliano in the year of 1994.

The combine use of these procedures is the gold standard for the axillary sentinel lymph node Biopsy in breast carcinoma with 97.0% preciseness rate, but this amalgamate utilization is present with high expenses. Some professionals are only using blue dye for the diagnosis of the sentinel lymph node with much better reliability. The positive outcomes discovered by utilizing methylene blue dye and isosulfan blue dye were 99.0% and 97.0% correspondingly. Whereas one other research work for methylene blue dye showed the sensitivity and specificity of 85.70% and 71.40% respectively. This research work aimed to detect the sentinel lymph node precisely by methylene blue dye. This research work has high sample size as compared to the studies of past conducted in our country.

METHODOLOGY:

This was a quasi-experimental research work conducted Civil Hospital Karachi from March 2016 to December 2018. The ethical committee of the institute gave the permission to conduct this research work. Total 85 patients were the participants of this research work. We used the formula to select this size of samples with sensitivity at 95.0% Confidence Interval and set the error of margin at 10.0%. We confirmed the carcinoma with biopsy. We took the written consent from every patient after explaining them the purpose of this research work. Patients present with other serious complications as inoperable disease, past

history of the breast surgeries, palpable and with large size of tumors were not the part of this research work. Same senior surgeon of the institute performs all the surgeries. On surgery table, we gave prophylactic antibiotics to all the patients and after the draping from 3 to 5 milliliters sterilized 1.0% methylene blue dye was infiltrated with 10.0cc syringe in peri-tumoural region of the infected breast. We carried out the gentle breast massage for two minutes and then after ten minutes of dissection was carried out in axilla for placement of the sentinel lymph node by providing incision in axilla. We identified the nodes and dissected carefully. We carried out the radical mastectomy with the axillary clearance as well as sentinel lymph node and mastectomy with the axillary clearance samples ns to the laboratory of histology static in formalin in 2 separate bottles labelled A and B correspondingly and we performed the comparison of the histopathology for both two groups.

We used the SPSS V.20 for the statistical analysis of the collected information. We calculate the average and SD values for the age, weight and size of tumor of the patients. We calculated the frequencies for involvement of the breasts, involved quadrant and preciseness of the methylene blue dye. We arranged a 2x2 table to measure the PPV, sensitivity, NPV, specificity and preciseness of accuracy of methylene blue dye for the prediction of the axillary status utilizing the gold standard of histopathology. We controlled the effect modifier with the stratification of weight, sex, tumor size, involvement of breast and breast quadrant to examine the resulted variables.

RESULTS:

Total 85 patients were the part of this research work having the age from 23 to 70 years. The average age of the patients was 45.70 ± 1.0 years. Most of the patients were in the age group of 45 to 56 years. Total 89.40% (n: 76) patients were available with the tumor in the superiolateral quadrant, 4 patients were present with the tumor in superiomedial quadrant, three patients had tumor in inferiomedial and only 2 patients were present with tumor in inferiolateral quadrant. The carcinoma was present in right side in 62.0% whereas 38.0% patients were present with carcinoma on left. Total 31.80% (27) patients appeared with T-1 tumor (less than two centimeter) while 45.90% (39) patients were present with T-2 tumor (two to five centimeters), 22.40% (19) patients were present with T0-3 (greater than five centimeters) as elaborated in Table-1.

Table-I: Size of the Tumor (n=85).

Size of tumor (in cm)	No	Percent
<2 cm (T1)	27.0	31.80
2-5 cm(T2)	39.0	45.90
>5cm(T3)	19.0	22.40

Histopathology of patients appeared to be infiltrating ductal cancer except in one patient which appeared with lobular carcinoma. Carcinoma was present in sixty-one (71.70%) patients out of 85 patients. Two patients were present with negative sentinel lymph node but positive non-sentinel lymph node (false-negative). In 3 patients, there was involvement of only sentinel lymph node but there was no involvement of the remaining axilla (False-positive). The test values, preciseness, sensitivity and specificity of the approach are present in Table-2.

Table-II: Values Of The Test And The Disease Positive (n=85).

Sentinel Lymph Node	Total	Histopathology +	Histopathology -
Sentinel Lymph Node positive	61.0	3.0	80.0
Sentinel Lymph Node Negative	2.0	19.0	21.0
Total	63.0	22.0	85.0

DISCUSSION:

The most suitable approach for the identification of the sentinel lymph node remains a discussion able topic from many years. Surgeon experience is always important in the accurate detection of the sentinel lymph node. The precision, sensitivity and specificity 94.10%, 96.80% and 86.36%, which is much comparable to other research works which displayed 92.0% to 100%, 83.0% to 100% and 100%. The positive and negative predictive values of other research works were 75.0% and 83.330% correspondingly as compared to this current research work which displayed 76.250% and 90.40%. There were 85 patients in this research work which is better proportion in comparison to the other research work conducted by Vohra who included thirty patients in his research work. The frequency of the negative sentinel lymph node and axilla was stated as 62.0% by Kebudi, 70.0% in the study of Zaman and 53.30% was in the study of Vohra, whereas in this research work 74.07% (n: 20) patients with T-1 tumor were present with axilla and negative sentinel lymph node for metastasis. The explanation about this variation was provided by the Guilliano in his study conducted in 1994. In his research work, he included one hundred and seventy patients and illustrated (65.0%) diagnosis and (12.0%) false-negative rates. Some other research works explained that there is very distinct and low obtainable learning curve of this method and it will improve the detection and improved false-negative outcomes. There is very high burden of healthcare facilities on the management system of health due to the

overpopulation in our country Pakistan and there are more than eighty percent females are present with the risks of the breast cancers. So this type are procedures are very beneficial in our country due to its low cost and the high precision rate and it restricts the use of costly equipment in health care facilities.

CONCLUSION:

The methylene blue dye approach is very secure and reliable identification modality for the diagnosis of the sentinel lymph node in the patients suffering from breast carcinoma is very accurate and cheap procedure to evaluate the metastatic condition of the axillary lymph nodes.

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