



A Study of CD10 - A Stromal Marker in Breast Carcinoma

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Abstract

Breast carcinoma is one of the commonest cancer in women. It is the leading cause of death in women, with more than one million cases occurring worldwide annually [1]. Breast cancer represent an important public health issue, having a high occurrence worldwide, with an obvious increasing tendency [2].

Breast cancer is the most common cancer among women in India according to National cancer registry programme 2011 report [3].

1. To study the expression of CD-10 a stromal marker in breast carcinoma.
2. To study the correlation of CD10 with ER, PR and HER2/neu status in breast carcinoma.

With the approval of the Ethical committee, SBMCH (Sree Balaji Medical college and Hospital), the study was conducted in the Department of Pathology, for the duration of two years from September 2015 to September 2017. This is a prospective study in which 50 samples of breast carcinoma by clinical and histomorphological method are included in the study.

Keywords: Stromal; Breast Carcinoma; CD10

Introduction

Breast carcinoma is one of the commonest cancer in women. It is the leading cause of death in women, with more than one million cases occurring worldwide annually [1]. Breast cancer represent an important public health issue, having a high occurrence worldwide, with an obvious increasing tendency [2].

Breast cancer is the most common cancer among women in India according to National cancer registry programme 2011 report [3]. Every year the incidence of breast carcinoma is increasing in India [4]. Worldwide it is the most common non-skin cancer in females [5]. By the year 2030 global burden of breast cancer will be more than two million every year. Recent data point to the fact that most of the women with breast cancer are diagnosed between the age group 25 to 45 years [1]. In underdeveloped countries and in India majority of the patients present themselves to medical care with advanced stages of disease and hence the prognosis is poor leading to poor five years survival rate. Over the last few decades there have been better advances in breast cancer.

Detection of breast cancer metastasis at the earliest stage is important for the management and prediction of breast cancer progression [6]. It has also made improved outcome for women living with disease. Breast cancer is no longer seen as single disease but rather a multifaceted disease consisting of diverse biological subtypes with distinct natural history. Breast cancer presents as a varied spectrum of clinical, pathological and molecular features with diverse prognostic and therapeutic implications.

Breast tissue is composed of duct (epithelial origin) and stroma (mesenchymal origin). Epithelial growth of tumour depends partly on chemical mediators between tumour cells and stromal cells [7]. CD10 is a myoepithelial marker [8]. In Invasive ductal carcinoma of breast CD10 loss in myoepithelial cell and CD10 expression in stromal cells indicates epithelial to mesenchymal transition (EMT) and is associated with aggressive behavior. Recent studies suggest that genetic changes in stroma can promote carcinogenesis [9].

CD-10 is a 90- to 110-kDa cell surface zinc dependent metallo-proteinase which is known as "Common Acute Lymphoblastic Leukaemia Antigen" (CALLA). CD-10 acts as a stem cell regulator in the breast and prevents uncontrolled proliferation on stem cells [10].

Although breast cancer is an epithelial malignancy, stroma plays a key role in modulating tumor invasion and metastasis. A better understanding of stromal contribution to cancer progression will identify specific signals that promote growth, dedifferentiation, invasion, and ectopic survival of tumor cells and may eventually result in the identification of new therapeutic targets for future treatment [11].

Aims and Objectives

1. To study the expression of CD-10 a stromal marker in breast carcinoma.
2. To study the correlation of CD10 with ER, PR and HER2/neu status in breast carcinoma.

Materials and Methods

With the approval of the Ethical committee, SBMCH (Sree Balaji Medical college and Hospital), the study was conducted in the Department of Pathology, for the duration of two years from September 2015 to September 2017. This is a prospective study in which 50 samples of breast carcinoma by clinical and histomorphological method are included in the study.

Patient details such as age, clinical presentations, stage of the disease, radio diagnosis were obtained from the requisition form sent by clinicians and the details of pathological aspects like gross findings etc. are noted

The patients were selected based on following inclusion and exclusion criteria.

Inclusion criteria

- 1. Age from 21-80 years
- 2. Patients with invasive breast carcinoma irrespective of type, grade diagnosed by histopathology in the department.
- 3. Invasive breast carcinoma irrespective of nodal metastasis or not
- 4. Patient irrespective of whether axillary dissection done for lymph node status or not.
- 5. Mastectomy, Modified Radical Mastectomy, Lumpectomy, Core biopsy specimen received in the department of pathology.

Exclusion criteria

- 1. Age less than 21 and more than 80 years.
- 2. Breast carcinoma *in situ* irrespective of type diagnosed by Histopathology.
- 3. Those patients who have not given consent.
- 4. Male patients.

The final study population included 50 patients, who are diagnosed with breast carcinoma which included patients aged 21 to 80 years, who has undergone mastectomy procedure after obtaining informed written understandable consent.

The specimen was received to pathology department in 10% neutral buffered formalin. After adequate fixation, the gross morphology of the specimens was recorded with total submission of breast samples and representative bits were taken from mastectomy specimens. After tissue processing, 5 - 7um thick sections were stained with haematoxylin and eosin and were studied microscopically. Relevant clinical data was collected from the hospital and laboratory records [12].

Conclusion and Summary

- 1. Carcinoma breast occurred predominantly in the age group of 40-60 years.
- 2. In majority of the cases tumour size is less than 5cm.
- 3. Lymph node positivity is seen in all patients with invasive ductal carcinoma grade III.
- 4. CD10 expression in stroma is seen in 27 out of 50 cases of invasive ductal carcinoma.
- 5. Out of total 50 cases of invasive ductal carcinoma, CD 10 positivity was seen in 18 of 29 ER/PR positive cases.
- 6. Out of total 50 cases of invasive ductal carcinoma, 28 were HER2/ neu positive of which 19 cases were CD 10 positive.

To conclude, CD10, a stromal marker should be used in conjunction with ER/PR and Her2/neu Immunohistochemistry to predict the outcome in breast carcinoma for probable diagnostic therapy in future. Further studies need to be done to study the role of CD10 in breast carcinoma in invasion and metastasis.

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