Lysosomal Associated Membrane Protein Correlates with Breast Cancer Recurrence CD68 and CD45 leukocyte common antigen in Iraqi women patients

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Abstract

The prospective of this study was to determine the value of tumor-infiltrating macrophage cells with CD68+ a lysosomal associated membrane protein (LAMP) so as CD45+ which play important roles in cell recognition as a membrane glycoprotein. This clinical study used immune based biomarkers technique to prognosticate and evaluate for the entire effective activity of breast cancer (BC) disease in Iraqi women. The study concluded (34) female conflicted with BC in different stages of carcinoma, range aged (18-80 yrs) compared with (10) healthy individual. However CD68 and CD45+ markers were assessed by Immunohistochemical (IHC) staining of permanent tissue. The results of this study showed there were a significant differences of these markers compared with healthy control represented by highly significant leukocytes of CD45+ (P < 0.01) in absolutely of (+ve of 34/34) 100% for all patients with aggregates of tumors and high significant (P< 0.05) of tumor-infiltrating macrophage CD68+ 85.29 % (+ve 29 out of 34). The tested groups compared with the same healthy slide cleared with high percent in age (<40-80) for both clusters. The study concluded that there was a correlation between BC and tumor-infiltrating macrophage cells with CD68+ and CD45+ leukocyte common antigen as predicted markers detection. The collection of these observations suggest that CD68+ and CD45+ have an activation role so as differentiation of these clusters differentiation in leukocytes in breast cancer.

Key words: Macrophage, cluster differential, CD 68+, CD45+, breast cancer

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Introduction

Breast cancer commonly referred to as carcinomas the most common type have an epithelial origin (1). the exact cause of breast cancer is unknown (2). The primary risk factors of developing breast cancer are being a female aging and many environmental factors that’s can directly change genes mutation so as genetic conditions (3-6). The increased of span malignant cells are related to have an protein expression of lysosomal associated membrane protein (LAMP) family members that correlates with breast cancer recurrence CD68 or which was originally named protein macrophage glycoprotein antigen (MAG) (7). It has been postulated CD68 to play diverse roles in various cellular processes such as phagocytosis, lysosomal metabolism, binding low-density lipoprotein, and cell pathogen interaction (8). The cluster differentiation of CD45 of leukocyte represented by membrane glycoprotein is expressed on the most of all hematopoietic of phagocytes (9). The prospected of CD45 which is a receptor trans membrane protein of tyrosine phosphatase that is expressed on all phagocytes (white blood cells), and have a crucial in playing function in objective of these cells. The studies rolled that the protein of gene expression of CD45 is essential for the activation of T cells and the receptor of T cell (TCR) (10). Highly activity can be related with 97-90% of B-cells and T-cells respectively. And
the precursor of the two types of lymphoblastic cells related with 69%. Activities of interaction and assistant of a T cell with an antigen presenting cells as in mononuclear cells such other name dendritic cells so as /or a macrophage is crucial for stimulating an immune response so as B- cells (11). Infiltration of Immune cells diagnostic through antibodies markers for CD45 were present in both healthy and tumor tissue, but with substantially increased density in tumor tissue (12).

Objectives

The aim targeted of this prospected research study to determine and evaluate the activity of tumor-infiltrating macrophage cells by CD68+ a lysosomal associated membrane protein (LAMP) so as CD45+ membrane glycoprotein related with leukocyte cluster differentiation with common antigen denoted as a spread of membrane glycoprotein.

Materials and methods

The study program of experimental steps followed by an ethical humanity which relate within agreement by institution of Iraqi Health Ministry/Medical City.

The study enrolled (34) embedded tissue (blocks) from females inflicted with breast cancer whom their age (18-80 yrs). Embedded blocks of the tissue patients containing the highest density of malignant cells were chosen for each case under an approval by a consultant of pathologist who choose tumor and adjacent normal tissues (10 cm away from the tumor border) with ten healthy individual as a comparative group. All patients had not been treated with chemotherapy and radiation therapy. Paraffin blocks samples were micro dissected using H&E-stained sections and the diagnoses of the all samples were reconfirmed histological (13). Immunohistochemistry method were performed on (4μm) sections for patients suffered with breast cancer by using of CD68 (monoclonal mouse anti-human CD68; code: M0876 and CD45 code; M0701 dilution: 1:100, Dako) as leaflet kit.

Results and discussion

The study have been used immune markers to prospect for women suffered with breast cancer. However CD68 and CD45+ markers were assessed by Immunohistochemical (IHC) staining of permanent tissue for these patients. The results of this study showed there were a highly significant differences (P< 0.0001) of these markers for these patients related with tumor-infiltrating macrophage CD68+ and CD45+, percent with 85.29 % (29 out of 34) and absolutely percent (100%) for CD45+ respectively clear with high percent in age (<40-80) for both markers, but can't explain the mechanism of function why. In the disease of breast cancer and tumors an elevated rate of markers as in CD68 and CD45as a clinically relevant marker which revealed importantly. Signs which have been detected in breast carcinomas that are denoted for looking for risk and metastasis (14). The study concentrated of the attention about the relationship of CD68 marker with breast cancer stages specially in malignancy tumors in different stages, which showed increased correlation with age (45-80) and which have been explained by figure (1) compared with normal breast tissues. The marker of CD68 which is a type of the LAMP of member family with is highly expression and glycosylated on the lysosomes bodies and so as with membrane surface of macrophages. It is primarily used as a marker for macrophages and although its function is unknown in cancer, it has been shown to have clinical importance because increased expression of CD68 has been related with a defect of breast cancer recurrence with membranous and would signify macrophage infiltration of the tumor (15).

Upon these data results which showed that high CD68+ expressed by macrophage infiltration is released with an increasing of survival in patients <40 years of age and with a related of prognostic in patients whose tumors are also closely infiltrated by tumor associated macrophage TAMs. While many studies findings about patients with BC have denoted that the increased of CD68+ cells in lobular tumor parts related with rare prognostic roles, increased angiogenesis, suspected with decreased disease-free survival, higher tumor grade (16).
Fig. 1: Sections explained (–Ve) in normal breast tissue and (+Ve) of CD68 in breast cancer tissues as in (a, b) respectively.

So as for CD45+ which is a receptor of membranous protein that is expressed on all phagocytes parts among leukocytes, and which plays a critical role in the mechanism of function of these cells can see that in figure (2). The studies showed that the expression of CD45+ that is play role in the stimulation of T lymphocytes through T cell receptor (TCR), and the isoforms of CD45 have the ability to activate T cell (17).

Many reported studies related with breast cancer have detected different isoforms of CD45-expressing of lymphocyte aggregates with breast cancer, including and CD8+ T cells, CD4+ T cells, CD20+ B cells, so as multiple myeloid-lineage cells represented by Hematopoietic Stem Cells (HSCs) lymphoid and myeloid. Cells of the myeloid lineage develop during the process of myelopoiesis and include Granulocytes, Monocytes, Megakaryocytes, and Dendritic Cells, including tumor-associated macrophages (TAMs) which mean CD68 which often identified by (IHC) detection (18).

Studies revealed and showed high percentage of all tumor lymphocytes (lymphoma) with a positively is seen in 97% of B the expression of molecules from the CD45 family on T cells (2). And it is essential for activation of these cells by the T cell receptor and or can have a role as co- stimulating effects through accessory molecules cell. So as large studies proposed that CD45 receptor expressed privately can stimulates programmed cell death in thymus gland as in thymocytes and mature T cells(18-19).

The of CD45 which exposed expressed on T cells realized for the role T cell activation through of the complex related by receptor T cell represented by (CD3) of TCR-CD3 so as of CD2 and CD4/CD8. These studied results are correlated with CD45 that play a a good role in T cell to simulating and activating (17, 20).
Conclusion/ Recommendation

The study concluded there was a correlation between BC and tumor-infiltrating macrophage cells with CD68+ and leucocyte common antigen CD45 as marker detection. The collection of these observations suggest that CD68+ and CD45+ have an activation role so as differentiation of these clusters differentiation in leucocytes in breast cancer. The precise origin of these CD68 and CD45+ cells is under investigation, including additional phenotypic characterization for TAMs. Results will be correlated to patient stage, tumor subtype and response to therapy. Additional studies are needed to discern which of these subpopulations are most clinically relevant. Estimation of PCR-Technique for genes of these markers.

References


