ANALYSIS OF BLOOD BIOMARKERS FOR THE EARLY DIAGNOSIS OF BREAST CANCER TNM STAGE III IN FEMALE POPULATION OF PAKISTAN

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Abstract:
Breast cancer is the second most common type of cancer (after lung cancer), and the fifth most common cause of cancer death. This study aimed to assess the blood circulating serum biomarkers for the early diagnosis of breast cancer TNM stage III in local population of Pakistan. This cross sectional study was conducted in health department Punjab during 2019. The main eligibility requirements for this study included the patient's written informed consent, metastatic breast cancer, patients entering first-line chemotherapy (chosen by clinicians) with or without targeted therapy, life expectancy of at least three months, and measurable or evaluable disease. The results indicates that CTC, CEA and ALP are the best indicating serum biomarkers for the diagnosis and progression of breast cancer. Mean, median and SD shows that there is a significant relationship in these serum biomarkers. It is concluded that biomarkers and TAC are the useful tool for the analysis of progression of breast cancer in females.

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INTRODUCTION:

Breast cancer is the second most common type of cancer (after lung cancer), and the fifth most common cause of cancer death. Breast cancer, the most common cancer among women worldwide, accounts for the highest morbidity and mortality[1]. The etiology of breast cancer is multifactorial and numerous risk factors associated with breast cancer may exert their effects via generation of an oxidative stress status[2]. In all over the world, breast cancer is considered the most common type of cancer among women. Every year, breast cancer accounts for 22% of new cancers found in women. Breast cancer is a disease with multiple etiological factors linked to genetic, environmental, social demographic, behavioral, psychological and hormonal factors[3].

Tumor heterogeneity that enables malignant progression by evolutionary selection is also the major cause of emergent resistance during cancer treatment[4]. Yet, we rely on few standard diagnostic tumor biopsies for the characterization of a given cancer. These specimens will provide only a partial characterization of the overall makeup of the dynamic systemic disease cancer represents with intratumoral and interlesional heterogeneity as well as emerging host responses[5].

Objectives of the study

This study aimed to assess the blood circulating serum biomarkers for the early diagnosis of breast cancer TNM stage III in local population of Pakistan.

METHODOLOGY OF THE STUDY:

This cross sectional study was conducted in health department Punjab during 2019. The main eligibility requirements for this study included the patient's written informed consent, metastatic breast cancer, patients entering first-line chemotherapy (chosen by clinicians) with or without targeted therapy, life expectancy of at least three months, and measurable or evaluable disease.

Statistical analysis

The data were analyzed using one-way analysis of variance (ANOVA) followed by multiple comparison test. All biochemical experiments were performed thrice in triplicates to ensure reproducibility.

Results

The results indicates that CTC, CEA and ALP are the best indicating serum biomarkers for the diagnosis and progression of breast cancer. Mean, median and SD shows that there is a significant relationship in these serum biomarkers. CTC and serum marker values at inclusion repartition in percentile, mean, median range are given in Table 1.

Table 01: Serum marker values repartition at inclusion

	Mean	SD	Quantile 0%	Quantile 25%	N
CEA	7.20	18.23	0.04	0.4	212
CYFRA21	9.01	29.51	0.1	0.65	191
LDH	1.39	2.02	0.28	0.71	220
ALP	1.056	1.00	0.26	0.58	241

DISCUSSION:

The need for novel independent prognostic factors in metastatic breast cancer patients is much lower than the need for dynamic blood markers, which can indicate the treatment efficiency in a reliable and early fashion[7]. Here, by comparing the early and late changes of five blood markers together with CTC changes for PFS prediction, we showed no clear superiority of CTC over the other serum markers[8]. This result was, however, not the primary endpoint of our study, and the statistical power of these analyses may still be discussed, although performed in more than 200 patients[9-10].

CONCLUSION:

It is concluded that biomarkers and TAC are the useful tool for the analysis of progression of breast cancer in females.

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