



Study of some blood indicators in women with breast cancer at the National Cancer Center in Najaf Al-Ashraf Governorate

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Abstract: *The current study aims to shed light on the importance of blood standards in determining abnormality score values in studying the disease for patients with breast cancer (BC) and comparing them with healthy people. The study included (50) women with breast cancer at different stages of the disease, with an average age ranging from (35 - 75) years. The study also included (25) healthy women used as a control group. Samples for this study were collected for the period (from the first of January to the end of June of 2023). They were collected from patients attending the National Educational Center for Oncology in Najaf Governorate and who were diagnosed clinically and laboratory. The study found that the mean of MCV, MCH, MCHC, RDW-SD, and RDW-CV in the patient group were higher than those in the healthy group, while the mean of RBC, HB and PCV in the patient group were lower than those in the healthy group. This study demonstrated the importance of blood standards as useful markers and methods that help in distinguishing between individuals afflicted with breast cancer and individuals in a state of good health. people. Patients with BC may have significant changes in various blood parameters. Blood parameters must be tested regularly for early diagnosis of the disease and the necessary follow-up is performed.*

.Keywords: *Breast Cancer,, blood parameters, red blood cells, white blood cells, complete blood count.*

1.Introduction

The term cancer is used to describe cells that divide abnormally and can invade other body tissues. Breast cancer (BC) occurs in breast tissue, which is represented by the tubes, ducts, and glands that secrete milk[1].

The cancer of the breast represents the most common malignant tumor among women all over the world [2], as it represents about 25% of all types of cancers that affect women [3]. It is considered to have a high mortality rate from

cancer-related diseases among women. The rate of infection with the disease in Iraq has increased since 2018, including new cases for both sexes and for different age stages, reaching about 20.3% [4]. The risk of breast cancer is affected by several factors, including age, the period of menopause, and the patient's family health history [5].

Anemia is an important complication in women that is commonly observed in cancer patients and can be caused by bone marrow damage, nutritional deficiency, tumor

infiltration, surgery and bleeding [6]. Because it provides vital information about the types of cells, particularly RBC, WBC, and PLT, the complete blood count (CBC) is a routine test that doctors frequently request to diagnose a variety of diseases, including anemia, acute infections, bleeding, allergic malignancies, cancers, immune disorders, health examinations, and evaluations prior to surgery.[7], [8] . Blood parameters also serve as a warning sign in breast cancer patients [9]. As a result, the CBC examination is an essential test before using any treatment [10].

Recently, attention has been devoted to the distribution of red blood cells (RDW) and the percentage of Platelet PLT and lymphocytes as important factors of inflammation, including cancer detection and progression, and prediction of survival [11]. Given the importance of hematological parameters in breast cancer detection, this study set out to comparing between women with breast cancer and healthy control group.

2.Methodology

The study included (50) women with breast cancer at different stages of the disease, with an average age ranging from (35 - 75) years. The study also included (25) healthy women with characteristics consistent with the previous group, and this group was classified as a control group. Samples for this study were collected for the period (from the first of January to the end of June of 2023). They were collected from patients attending the National Educational Center for Oncology in Najaf Governorate and who were diagnosed clinically and laboratory. About 5 ml of venous blood was collected from all sick and healthy women to test blood parameters. The samples were placed in sterile EDTA tubes containing an anticoagulant, and the samples were placed in the Hemolyzer Analyticon (Germany) automatic blood analysis device, where the device takes test samples, dilutes them automatically, and corrects errors in a way. Automatically then the results are read.

Statistical Analysis

The study was statistically analyzed using the SPSS statistical analysis program to express the results. There were substantial differences between the two groups, as indicated by the average and standard deviation of ($P \leq 0.05$).

3.Results and Discussion

The results revealed a significant decrease ($P 0.05$) in the mean number of RBC in patients when compared with the control group, while a higher significant ($P 0.05$) in the mean of MCV, MCH, and RDW-SD in patients compared to their respective control groups. On the other hand, the study showed no significant difference in mean HB, PCV, HCHC, or RDW-CV in patients compared with the control. It appears in Table No. 1.

Table (1): Mean values ($\pm$ SD) for hematological parameters in the patient group and the control group

Sub ject s	RBC ($10^9/L$) Mean $\pm$ SD	HB (g /dL) Mean $\pm$ SD	PCV (%) Mean $\pm$ SD	MCV (fl) Mean $\pm$ SD	MCH (pg) Mean $\pm$ SD	MCHC (g/dl) Mean $\pm$ SD	RDW- SD(fl) Mean $\pm$ SD	RDW- CV Mean $\pm$ SD
con trol	4.35 $\pm$ 0.80	11.2 5 $\pm$ 2.09	34.29 $\pm$ 7.09	78.60 $\pm$ 7.56	25.94 $\pm$ 1.95	33.19 $\pm$ 2.30	33.15 $\pm$ 6.03	14.70 $\pm$ 1.66
pati ents	3.93 $\pm$ 0.52	11.2 2 $\pm$ 1.39	32.98 $\pm$ 6.24	85.48 $\pm$ 5.32	28.40 $\pm$ 2.40	33.33 $\pm$ 0.95	47.34 $\pm$ 6.67	15.01 $\pm$ 2.61
P- val ue	0.023	0.942	0.438	0.000	0.00	0.67	0.000	0.538

The CBC blood count test is a routine procedure to diagnose some medical. Conditions, including immune disorders, anemia, and cancerous tumors. Complete blood counts were performed for some breast cancer patients and compared with healthy people. The results of the current study are consistent with a study[12], which showed that the average concentration of hemoglobin in the body of patients with breast cancer is an independent predictive factor for patients, as well as a study[13], which showed that hemoglobin and red blood cells in males and females with breast cancer were lower than control group. This indicates the occurrence of

anemia in cancer patients [14]. Also found that the rate of red blood cells decreased in patients compared to the normal rate, and this is perhaps due to the stage of the disease and the age of the patient. The current study also showed that the means of MCH and RDW values for the group of patients were higher than those of healthy people ($P \leq 0.05$), while RDW was higher in patients compared to healthy people, and this is consistent with the study conducted by [13], [15]. Red cell distribution width (RDW) is an index which primarily reflects impaired erythropoiesis and abnormal red blood cell survival [16].

The results in Table (2) showed that a significant decrease ($P 0.05$) in the mean number of WBC in patients when compared with the control group, while a higher significant ($P 0.05$) in the mean of MPV, and PCT in patients compared to their respective control groups. On the other hand, the study showed no significant difference in mean PLT, and LYM in patients compared with the control. It appears in Table No. 2.

Table (2): Mean values (SD $\pm$) PLT, MPV, PCT, WBC, LYM

Subjects	PLT ($10^3/\mu\text{l}$) Mean $\pm$ SD	MPV (fl) Mean $\pm$ SD	PCT % Mean $\pm$ SD	WBC ($10^3/\mu\text{L}$) Mean $\pm$ SD	LYM ($10^3/\mu\text{L}$) Mean $\pm$ SD
Control	264.72 $\pm$ 93.73	7.36 $\pm$ 0.77	0.20 $\pm$ 0.073	7.86 $\pm$ 2.16	2.13 $\pm$ 1.20
Patients	270.44 $\pm$ 92.77	9.85 $\pm$ 0.96	0.26 $\pm$ 0.074	5.81 $\pm$ 1.95	1.62 $\pm$ 0.71
P-value	0.804	0.000	0.003	0.00	0.062

The result showed that a significant decrease ($P 0.05$) in the mean number of WBC in patients when compared with the control group, while a higher significant ($P 0.05$) in the mean of MPV, and PCT in patients compared to their respective control groups. On the other hand, the study showed no significant difference in mean PLT, and LYM in patients compared with the control. These results are consistent with study [17], [18] which showed that the

number of WBC in patients was lower than that of the healthy group, and this is perhaps due to reasons related to It was found [14], [19] that the number of white cells and their decrease is one of the signs that should be noted in breast cancer patients, and that blood parameters, especially lymphocytes and neutrophils, are useful in diagnosing and monitoring patients [20]. Explained A decrease in the values of white blood cells and platelets before and after the surgical procedure. The results also showed that there were significant differences ($P \leq 0.05$) and an increase in MPV values for the patient group compared to healthy people. This indicates that there is a relationship between high levels of MPV and breast cancer. This is consistent with study [12] which showed a relationship between high levels of MPV and cancer of the lymphatic organs, as shown in [21]. Studies on blood diseases have shown that levels of MPV and PCT can be distinctive signs of cancer.

Conclusions

The study showed the extent to which breast cancer affects blood parameters and increases inflammatory factors, and that the complete blood count test is of great importance in diagnosing the disease, and when compared with healthy people, it may be an important and useful guide for oncologists for further treatment and follow-up. However, it is recommended to conduct more studies with a larger sample size. To confirm the results of the current study and the validity of these signs in diagnosing BC.

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