

Independence of liver, renal and blood physiology in prognosis of pre-menopausal breast cancer

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ABSTRACT : Early detection of breast cancer is one of the most efficient prevention strategies. The purpose of this research is to find out more about the possible association between progression of pre-menopausal breast cancer and the underlying metabolic and physiological changes in blood samples, liver and kidney functions among Egyptian males at Zagazig University Hospitals. 60 pre-menopausal breast cancer patients treated and followed-up at clinical oncology & nuclear medicine department. Biochemical parameters including albumin, liver enzymes, urea, creatinine were measured in blood. Results showed a statistically no significant change in hemoglobin and RBCs count of breast cancer cases compared to their controls. Also, parameters of liver and kidney function tests was no discernible difference between the two research groups ($P>0.05$). on the other hand, We discovered a considerable rise in levels of ALT and AST enzymes in the blood of breast cancer patient compared with control while the levels of albumin showing no difference between patient and control. Finally, these observations declared that levels of albumin, creatinine and urea in blood could be ignored and this may save time, efforts and money in in prognosis of pre-menopausal cancer in clinical Oncology Units.

Key Words: CBC, liver enzymes, renal function, breast cancer

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I. INTRODUCTION

In established industrialised countries, The most common disease in women and the second-leading cause of cancer-related deaths is breast cancer. In 2020, there were predicted to be 2.261 million new cases of breast cancer (11.7% of all sites) and 0.685 million new deaths, affecting women all over the world (6.9 percent of all sites). (Sung H et al., 2021). The most common malignancy among women in Egypt is breast cancer accounting about 38% of all female cancer incidence (Ibrahim et al., 2014). If the illness is caught early, there is a good chance of recovery and a high survival rate.

Certain complete blood count (CBC) indices have recently been found to be beneficial in predicting outcomes in breast cancer patients. For a number of common solid tumours, the neutrophil-to-lymphocyte ratio (NLR) has been used as a prognostic marker, includes malignant melanoma, breast carcinoma, gastric cancer, colorectal cancer, nasopharyngeal cancer, and others. (Arslan C et al., 2011). We evaluated the CBC parameters, liver function test and kidney function tests among breast cancer patients.

II.MATERIALS AND METHODS

This prospective study was carried out in Clinical Oncology Departments & Nuclear Medicine, Zagazig University Hospitals and Medical Biochemistry& Zagazig University's Molecular Biology Faculty of Medicine, Zagazig Egypt in collaboration with Zoology Department, Faculty of Science, Zagazig University.

The following will be done to all of the patients::

Taking a complete history and a thorough physical examination in clinical Oncology Units.

Routine a full blood count, liver and renal function tests.

Biochemical measurements:

10 ml venous blood was taken on EDTA-containing tube. Measurement of random blood glucose, (GPT), aspartate transaminase (GOT), albumin, urea and creatinine were performed by the semi-automated chemistry analyzer (Sunostik, China) using the commercially available kits (Spin react, Spain). Complete blood count (CBC) was performed by (Bene Sphera, India).

Statistical analysis:

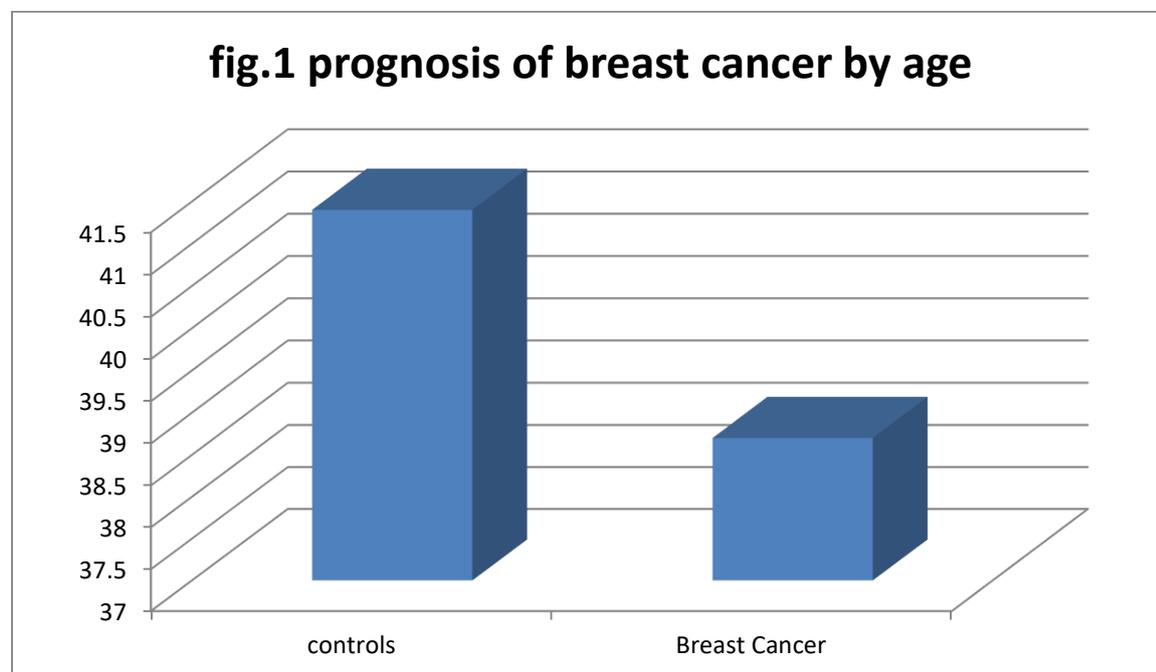
The gathered data were subjected to one-way ANOVA analysis using the software programme SPSS versions 2015, which was developed by SPSS Inc. and purchased by IBM in 2009; The mean standard error of the mean was used to report the results. The collected data and variables were statistically evaluated using the Student's (t) test. (Kim 2015).

Ethical consideration:

Patients will be asked to sign a written informed consent form that includes an explanation of the procedure and any potential risks. The study will be authorised by the Institute Review Board (IRB) of Zagazig University's Faculty of Science.

III.RESLUTS And DISCUSSIONS

Fig.1 represent the age of groups studied in this study were healthy persons of age about 41.4 and patients of breast cancer were of age 38.7 years.



Clinical and biochemical criteria associated with breast cancer

Hemoglobin levels dropped by a statistically significant amount and RBCs count of breast cancer cases compared to their controls (P=0.001 and 0.005) respectively, while other CBC parameters were statistically not significant

between both groups ($P>0.05$). There were no statistically significant differences between the two groups ($P>0.05$) in other tests of liver and renal function.

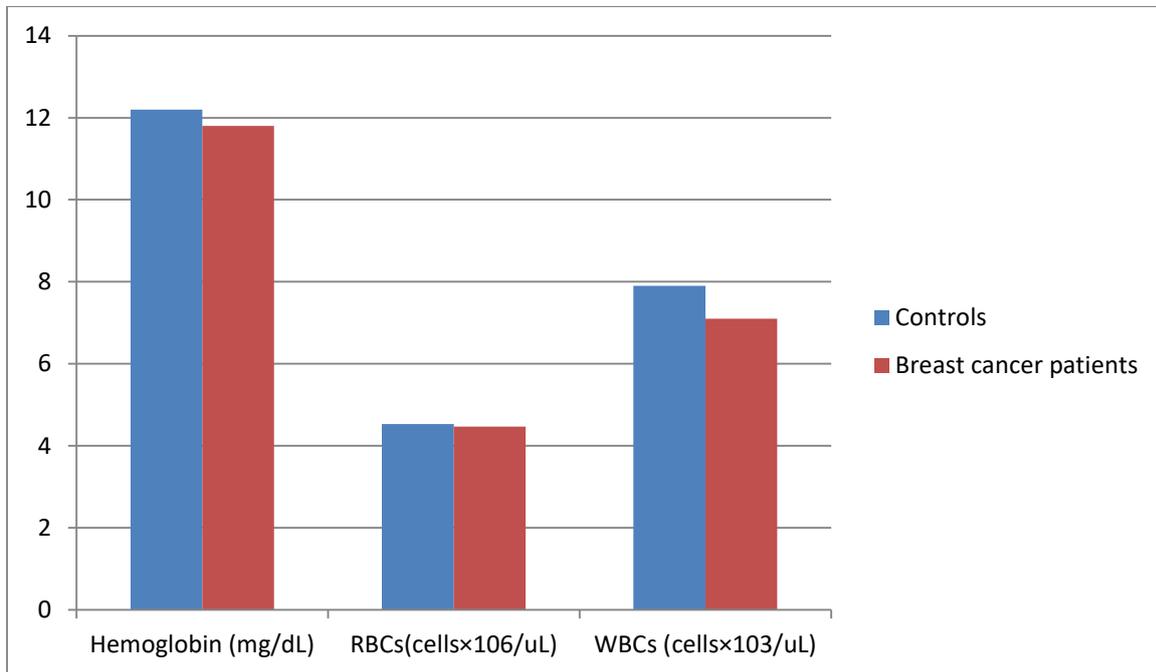


Fig.2 level of hemoglobin and counts of RBCs and WBCs in breast cancer patients

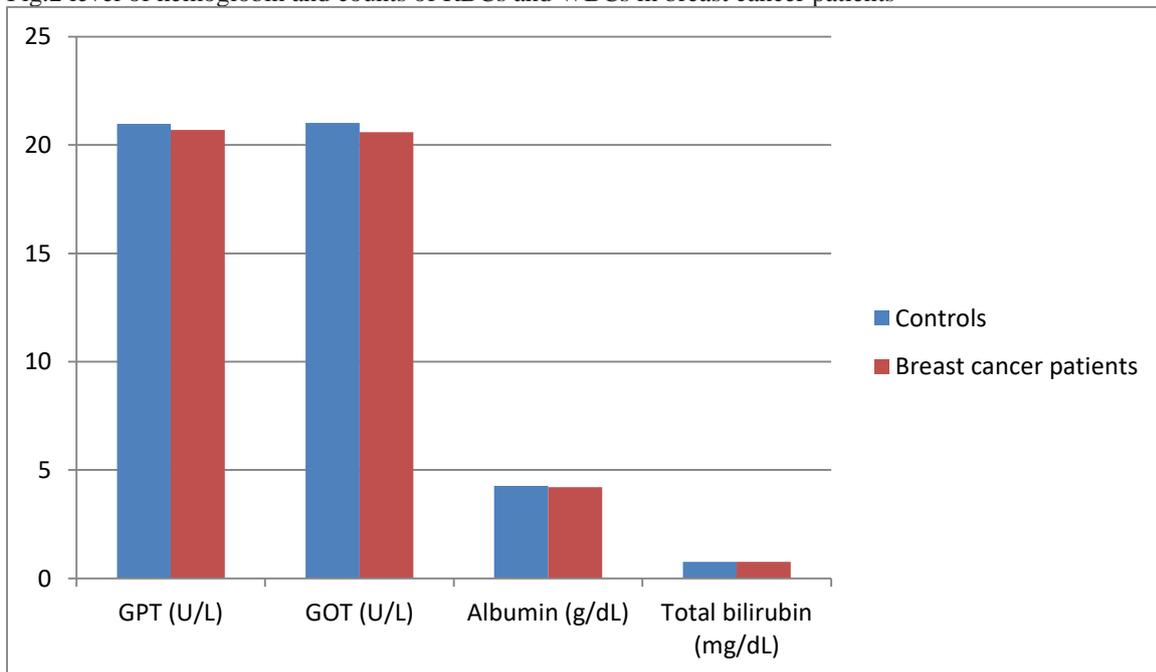


Fig.3 levels of liver enzymes GPT (U/L), GOT (U/L), Albumin (g/dl) and Total Bilirubin (mg/dl) in blood in breast cancer

Fig.3 represent levels of liver enzymes in patients compared with healthy persons, GPT and GOT levels have significantly increased, according to the findings. enzymes in blood of breast cancer patient compared with control while the levels of albumin and total bilirubin showing no difference between patient and control.

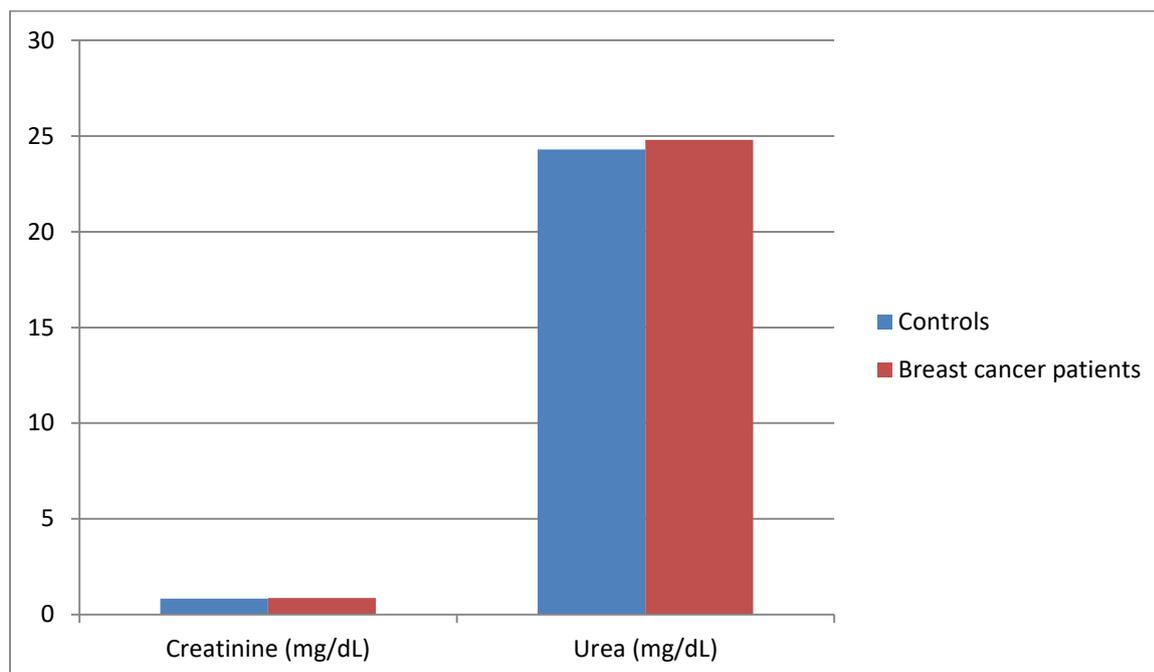


Fig.4 Levels of kidney Functions parameters; creatinine (mg/dl) and urea (mg/dl) in blood in breast cancer patients.

Fig. 4 represents levels of creatinine and urea in blood of breast cancer patient compared with control, reading revealed no significant differences between patient and control.

DISCUSSION

The present study showed no significant change of hemoglobin and RBCs count of breast cancer cases when compared to their controls ($P>0.05$) respectively. Other examinations of liver and renal function revealed no significant differences between the two groups studied ($P>0.05$). On the other hand, we found a significant increase in levels of ALT and AST enzymes in blood of breast cancer patient compared with control while the levels of albumin showing no difference between patient and control. Finally, there were no significant variations in creatinine and urea levels between the patient and control groups. These observations declared that levels of albumin, creatinine and urea in blood could be ignored in prognosis of breast cancer.

Anemia is a common side effect of cancer and cancer treatment that has been linked to patient energy levels and quality of life scores, as well as having a prognostic influence in a variety of cancers, including breast cancer. (Dubsky P et al., 2008)(Ludwig H et al.,2013). A number of researchers have proposed a link between haemoglobin levels after chemotherapy and local relapse-free survival in predicting the fate of breast cancer. ((Dubsky P et al., 2008) (Boehm DU., et al 2007).

Multiple studies have found that baseline anaemia and baseline haemoglobin are independent risk factors for transfusion. (Chaumard N et al.,2012)(Razzaghdoost A et al.,2020)(Barrett-Lee PJ et al.,2006)(Vincent M et al., 2007). However, the link was not shown to be statistically significant in our research.

CONCLUSION

Early examination of haematological and biochemical alterations linked with breast cancer may be effective in early treatment. Breast cancer patients who only show changes in CBC parameters may benefit from early treatment.

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