TOTAL ANTIOXIDANT, RENAL FUNCTION TEST IN IRAQI WOMEN WITH BREAST CANCER

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Article history:		Abstract:
		Cancer is a collection of disorders characterized by uncontrolled cell growth, with breast cancer being the most common among women. The purpose of this study is to look at renal function and total antioxidants in Iraqi women who have been diagnosed with breast cancer. Three groups of Iraqi women were chosen: group I (50 healthy women), group II (32 new patients diagnosed with breast cancer but not getting chemotherapy), and group III (43 patients who received chemotherapy). The study has included the measurement of two biochemical variables, including total antioxidant and renal function tests. The results showed a significant decrease in creatinine between groups I and III. The results also showed a significant increase ($P<0.05$) between the group I and the group II in all antioxidants. The findings also showed a significant increase in antioxidants between the groups I and II. There were also some non-significant results between each of the groups I and III, which included urea and creatinine. There were some non-significant results between both groups I and III in urea.

INTRODUCTION

Cancer is a group of diseases are that defined by unregulated cell proliferation[1]. At the end of 2020, ten million people died because of cancer, reaching 19.3 million new cancer cases word wide [10a16]. Breast tissue, namely the inner lining of milk ducts or the lobules that must supply the ducts with milk, is where breast cancer typically develops [2]. Furthermore, for the first time, female breast cancer overtook lung cancer as the malignancy with the greatest number of diagnoses. Cancer continues to be a major public health issue due to its rising incidence and death [1].

Breast cancer poses a serious threat to women's health in Iraq, according to several publications. This has been especially true in recent years [3], where there is a family history of the disease [4]. Nulliparity, taking oral contraceptives, hormone replacement treatment, inactivity, are the most common breast cancer risk factors [3]. Early diagnosis of breast cancer is critical in effectively lowering female mortality caused by breast cancer.

In recent years, there have been many cases diagnosed with breast cancer in Iraqi society. Thus, this study will concentrate on biochemical parameters for women with malignant breast cancer in Iraq, which may serve as diagnostic and prognostic markers in breast cancer patients. The ROS produced by cancer cells increases and thus stimulates the production of antioxidants significantly compared to the healthy group, and the lower creatinine level in the chemotherapy-treated group may indicate an improvement in kidney performance and an increase in creatinine uptake by nephrons.

MATERIAL AND METHOD

The study has been approved by the medical ethics committee of the Iraqi Ministry of Health. The samples have been collected from 115 women patients (Oncology Teaching Hospital of Medical City and Hewa Hospital in As-sulymania during the period from June 2021 to October 2021). These samples have been divided into three groups (Group II includes 30 newly diagnosed cases with breast cancer). Group III includes 35 chemotherapeutic cases and group I includes 50 healthy women (as contrast groups). The cases were diagnosed by the consultant medical team at the hospital through diagnostic criteria. The diagnosis was made according to clinical, mammographic, and histological findings. The age for selected cases, including the control group, ranged between (20 – 70 years). Three milliliters of peripheral

blood have been drawn from each case, then put in a gel tube and kept serum frozen (-20°C) until used.

The activity of urea and Creatinine were determined using full automated machine type cobas c311[5] [6]**.**

Total antioxidant were determined using CUPRAC Method[7]**.**

RESULT AND DISCUSSION
Levels of TAC

The levels of TAC were measured in groups I, II and III**.** Figure (1) indicates the mean± SE of TAC for these groups.
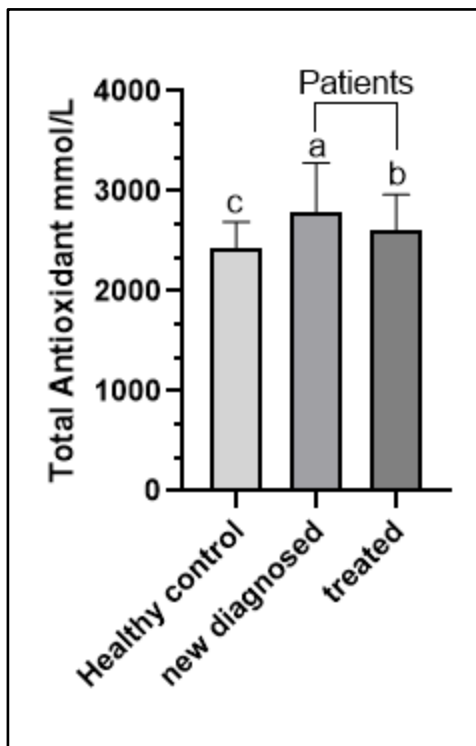

Figure (3-6) TAC Levels in group I, II and III

The mean for groups I, II, and III were 2435 mmol/L, 2792 mmol/L, and 2612 mmol/L, respectively. The results indicated that the level of TAC in group II was a significant increase compared with group I and this disagrees with Sateesh et al who reported that breast cancer patients have a decrease in antioxidant markers compared with the healthy group[133].

However, the study done by Singh et al revealed that plasma ferric reducing capacity (a method different than TAC) did not differ significantly between breast cancer patients before any treatment and healthy controls[134].

On the other hand, the results reported a significant increase in group III compared with group

I. This is in disagreement with Mohamed. He reported that significant decrease in treatment patients compared with the control group [135].

Significant decrease between the group III and group II in our study, that which agree with Costantini et al that reported TAOC was significantly decreased by chemotherapy patients compared with patients pre-treatment[8].

The chemotherapy mechanism of free radicals can be mediated by exhaustion of antioxidant protection system. Low level of TAC in patients with malignancy indicates increased consumption of antioxidants in plasma in response to increased production of reactive oxygen species. Thus, the result supports the hypothesis of the involvement of oxidative stress in the malignant process of the breast, it which evidenced an even greater reduction in antioxidant defense caused by the treatment.[9]

3.3.4 Levels of RFT
3.3.4.1. Levels of urea

The levels of urea were measured in group I, II and III. Figure (3-11) indicate the mean± SE for these groups
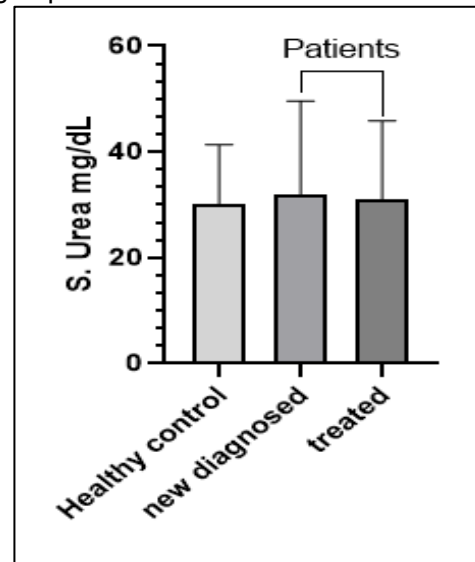

Figure (3-11) urea Levels in group I, II and III

The mean for **groups I, II and III** of the urea were 30.0 mg/dl, 31.8 mg/dl and 31.0 mg/dl respectively.

Urea is mainly derived from urea cycle reactions via hepatic detoxification of free ammonia and removed through urethra, and the serum urea value is an important medical indicator for assessing kidney function in patients with nephropathy; however, research pointing to the serum urea level as a risk factor for cancer is limited[10].

The results indicated that the level of Urea in **group II** were non- significant change compared to **group II**. These results agree with Yandi et al which showed non-significant change in patient with breast cancer compared to controls[10].

Our results reported that non-significant change in **group III** compared to **group I.** These findings agree with Boulaares et al as they found non-significant change in serum urea level in women with cancer who receive chemotherapy compared to controls[11].

3.3.4.1. Levels of creatinine

The levels of creatinine were measured in group I, II and III. Figure (3-12) indicate the mean ±SE of creatinine for these groups
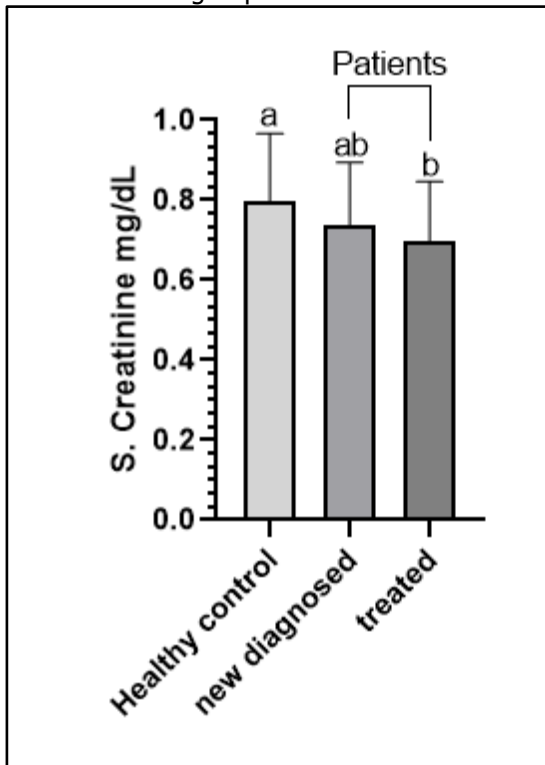

Figure (3-12) creatinine Levels in group I, II and III

For **groups I, II and III** the mean of the creatinine were 0.797 mg/dl, 0.736 mg/dl and 0.699 mg/dl respectively.

Serum creatinine is essentially a creatine breakdown product that is proportional to total skeletal muscle mass and is constantly removed in the steady state. Although serum creatinine is known to be altered by age, gender, ethnicity, and dietary protein consumption, it is a relatively stable marker and is frequently employed as an easily tested proxy

measurement of skeletal muscle mass when protein intake is appropriate[12]

Our results indicated that the level of Creatinine in **group II** were non-significant different compared to **group I**, Our findings agree with Kamal Adel Amin, as they fond non-significant change in serum Creatinine level in women with cancer who did not receive chemotherapy compared to controls[13].

On another hand our results reported that significant decrease in **group III** compared with **group I**. These findings disagree with Boulaares et al as they fond significant increase in serum creatinine level in women with cancer who receive chemotherapy compared to controls[11].

CONCLUSION

The ROS produced by cancer cells increases and thus stimulates the production of antioxidants significantly than in the healthy group. On the other hand, chemotherapy leads to the consumption of antioxidants and thus lower levels than in the healthy group. Also, the decrease in the creatinine level in the group treated with chemotherapy may indicate an improvement in the performance of the kidneys and an increase in the absorption of creatinine by nephrons.

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