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Research Article

**CONCENTRATION OF TOTAL ANTI-OXIDANT STATUS
AMONG FEMALES SUFFERING FROM BREAST CANCER**

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Abstract:

Objective: The aim of this research work is to calculate the concentration of TAS (Total Anti-Oxidant Status) among females suffering from cancer of breasts.

Methodology: This research work is case-control study carried out in Jinnah Hospital Lahore. Total 20 females suffering from the complication of breast cancer and 20 healthy controls with matched age were the part of this research work. We measured the TAS of serum in both groups.

Results: The average TAS in the group of patients 0.91 ± 0.32 mmol/l was much lower in comparison with the participants of the control group $1.82 \pm .14$ mmol/l.

Conclusion: The recent research work showed that females suffering from breast cancer have very low level of total anti-oxidant status in comparison with the healthy control females. It is the matter of great concern that oxidative harm may happen in those patients who deplete the anti-oxidant defense of their body causing a very low level of total anti-oxidant status. The management of the supplements of anti-oxidants status like a blend of Vitamin-A, Vitamin-C & Vitamin-E are essential in the females with high risk of the development of breast cancer or after operation or with anti-cancer medicines.

KEY WORDS: Anti-Oxidative, Cancer, Pathophysiology, Serum, Neoplasm, Tissues & Immune, Concentration.

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INTRODUCTION:

Cancer of breast is very frequent neoplasm in females & is one of the main reason behind the high mortality due to cancer [1]. It is responsible for 20% to 25% of all the cancers of females in both India & Pakistan but the prevalence in United Kingdom per hundred thousand females is 3 times greater than the incidence in Lahore [2]. Persons with following traits are available with high risk of developing the breast cancer as high age, the past history of this complication in single breast, pregnancy after a very long time for the very first time, early start of the process of menstruation in low age, thyroid, meal with full of animal fat, fatness, high use of alcohol & the use of the oral contraceptive for very long duration [3]. Oxidative stress has its involvement in pathophysiology of almost all cancers [4] particularly breast cancer [5, 6]. The formation in high amount or very less removal of free radicals like reactive species of oxygen and reactive species of nitrogen is oxidative stress [7, 8]. This condition normally happens when the present supply of antioxidant in the body is not sufficient to control & neutralize the highly reactive elements of various kinds. The outcome is the damage to the cells that can cause the cellular mutations, breakdown of the tissues & immune compromise [9]. Anti-oxidant is substance when available in less concentrations comparative to oxidizable substrate decreases the substrate's oxidation [10]. These are very vital part for maintaining a good body health and they also restrict the formation of free radicals [11]. Oxygen free radicals are very reactive as well as full of toxicity [12]. Oxygen-free radicals encouraged peroxidation of lipid occupy in transformation of neoplasm [13]. Reactive species of oxygen have involvement in origination, promotion & advancement of carcinogenesis where there is occurrence of loss of particular gene of tumor suppressor [14]. In-vitro human lines of tumor cells create reactive species of oxygen high frequency than do non-transformed cell lines [15] & there is detection of identifiers of constitutive oxidative stress from in vivo carcinoma of

breast [16, 17]. This research work carried out to calculate the concentration of total anti-oxidant status in females suffering from breast cancer due to very limited research on this topic.

METHODOLOGY

Total 20 females with confirm breast cancer and twenty healthy females acting as controls were the part of this research work. These patients were new cases identified with this disease, receiving no anti-cancer treatment. All the patients complain about the mass in their breasts. The clinical examination of the females carried out through the ultrasonic test of their breasts and at last cytological assessment carried out. The patients with positive results in the tests for breast cancer were the part of this research work. Total 20 females with good health were the part of the control group. The range of the age of the patients was from twenty-five to fifty years. We took the consent from every participant and the ethical committee of the hospital gave the permission to conduct this research work.

All the participants were available without any past history of hyperlipidemia, heart diseases, diseases of kidney, diabetes or any other serious complication. The participants under medication before some time of the start of the research work were also not the part of this research work. The overall diet utilization of vegetables & fruits was not much different in both groups. Anti-oxidant assay kit was in use for the measurement of the TAS. Paired T-test was in use for the comparison of the total anti-oxidant status of the patients & healthy controls.

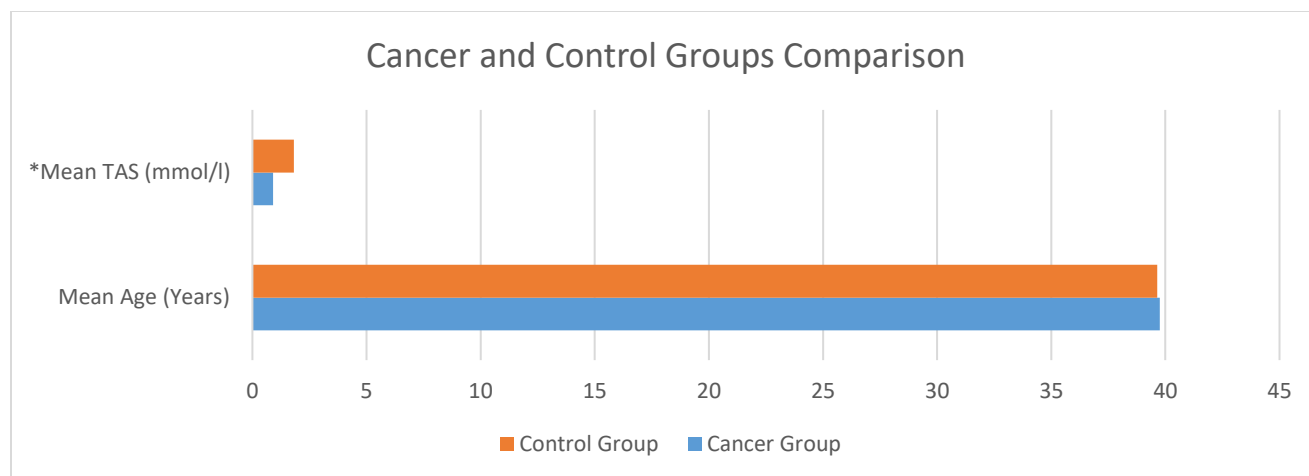
RESULTS

There was comparison of the participants in cancer & control groups in terms of their age (Average 39.75 ± 6.87 years for the patient group & 39.65 ± 6.67 years for the members of control group). The average total anti-oxidant status for the group of breast cancer was 0.91 ± 0.32 mmol/l which was much lower in comparison to the TAS as 1.82 ± 0.14 mmol/l in the members of the control group. (Table-I)

Table I : Comparison of Cancer and Control Groups

Variables	Cancer Group	Control Group
Mean Age (Years)	39.75 ± 6.87	39.65 ± 6.67
*Mean TAS (mmol/l)	0.91 ± 0.32	1.82 ± 0.14

* Statistically significant



DISCUSSION:

The finding of this research work showed that females suffering from breast cancer have less concentrations of TAS in comparison with the normal healthy controls. In a current research work conducted by Sharhan [6] discovered that poor TAS & high amount of oxidative stress has association with the risk of breast cancer as evident by amount of plasma Vitamin-A & Vitamin-E anti-oxidants in comparison with the healthy controls. One research work carried out by Kasapovic [18] displayed that females suffering from breast cancer have very less levels of anti-oxidant in plasma including copper, catalase, and zinc superoxide dismutase & glutathione peroxidase. He also measured the amount of total glutathione & CuZnSOD protein in the cells of blood from the patients suffering from breast cancer.

Yuvaraj [19] displayed that different circulating enzymatic & non-enzymatic anti-oxidants were very low among females suffering from breast cancer. The findings of this research work is similar to the above mentioned studies which show a very low level of TAS in females suffering from breast cancer. Some other studies showed a very high TAS level in females suffering from breast cancer. Portakal [17] displayed that mitochondrial activities & overall superoxide dismutase, catalase & glutathione peroxidase in the tissues of tumor significantly high in comparison to the healthy controls. Rajneesh [1] displayed an important increase in all types of anti-oxidants in the specimens of serum of all forty patients suffering from breast cancer. In recent research work, the measurement of TAS carried out but not the anti-oxidant of the individual. The measurement of the total activity of the anti-oxidant is very much better than the measurement of the anti-oxidant of the individuals. The calculation of all acknowledged anti-oxidant in serum is a very time taking activity and the total

activity may be higher than the total of the anti-oxidant status of individual [20]. The published data in this field discovered that TAS status is much lower in the females suffering from breast cancer in comparison with the females of healthy controls.

Current research studies have displayed that high peroxidation of lipids in the tissues of breast cancer & help the oxidative stress hypothesis in the carcinogenesis of breasts [1, 5, 6]. Fleischauer [21] displayed that the dangers of breast cancer reappearance & mortality related to the disease was less among females utilizing the supplements of Vitamin-C & Vitamin-E for greater than 3 years. He studied 32 patients for consecutive eighteen months. The prescribed treatment was a blend of the anti-oxidants as Vitamin-C, Vitamin-E, beta carotene, necessary fatty acids. The important observations as discovered from this research work are:

1. No patient lost his life in the duration of research work.
2. No patients were available with signs of metastases.
3. There was improvement in the quality of life of the patients.
4. Six patients were available with partial remission [22].

Dorjochoo [23] states that the supplements of Vitamin-E & Vitamin-B can provide protection against the disease of breast cancer.

CONCLUSION:

The recent research work showed that females suffering from the breast cancer are present with very low levels of total anti-oxidant status in comparison with the normal healthy females. It is the matter of great concern that oxidative harm may happen in the patients who are exhaust from the defense of the antioxidant in their body causing to very low levels of

total anti-oxidant status. The management of the supplementation of the antioxidants like the amalgamation of Vitamin-A, Vitamin-C & Vitamin-E are very essential among females with high risk of development of the breast cancer or after surgical intervention or with anti-cancer medicines. There is need of the further research works with large size of samples to consolidate the findings of this research work.

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