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Roles of Superoxide dismutase(SOD) , Malondialdehyde (MDA), 8-iso-prostaglandinF2α (8-iso-PGF2α)as oxidative stress in development and progression of Brest cancer in Iraqi females patients

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Abstract:-

Oxidative stress occurs as a result of disturbance in the balance between the production of reactive oxygen species (free radicals) and antioxidant defenses. Markers of oxidative stress were measured the markers of oxidative stress in breast cancer patients after diagnosis of breast cancer and compared these plasma blood levels controls This study was conducted to three markers of oxidative stress ;these are (SOD) enzyme ,malondialdehyde (MDA)and8-iso-prostaglandinF2α plasma of patients with breast cancer and compare with controls .In this study ; the mean MDA (ng/ml) levels for the breast cancer patients and the controls were55.91±3.31 and40.61±3.76 respectively, while the SOD (pg/ml) levels were1530.37±80.4 and1851.4 9±93.65 respectively and the 8-iso-PGF2α (ng/ml) levels were 40.16±3.31 and 30.16±2.34 difference of the mean were statistically significant (p value <0.05).

Keywords: Breast cancer, Malondialdehyde, 8-iso-PGF2α, Oxidative stress, Superoxide dismutase

Introduction:-

Breast cancer is that the most typically diagnosed cancer among women within the overwhelming majority (140/184) of states worldwide, representing 1 / 4 of all cancers diagnosed in girls(DeSantis et al., 2015). Breast cancer is the formation of a malignancy that has developed from cells in the breast(Israyelyan, 2003). Breast most cancer is a multifactorial disease environmental elements certain as radiation, viruses or chemical compounds bear a vital function so carcinogenic agents. At the identical time, numerous secondary factors: gender, age, economic development regarding the country regarding residence,(Tillashaykhov, Khudaykulov, Danilova, Usupbekov, & Alimkhodjaeva, 2017). Oxidative stress defined as an imbalance of oxidants and antioxidants in favor on the oxidants. the antioxidant defense mechanisms on the ethnic body, oxidative damage perform happen in imitation of lipids, proteins, and immediately to DNA (Lee, Cai, Shu, & Nechuta, 2017). It has been hypothesized as operative oxygen species (ROS) oxidative power may also play a critical role into cancer root cause and a progression or be associated along the proliferation potencies of breast most cancers (Hasan, Mathkor, & Al-Habal, 2012). Reactive oxygen species are produced consistently during normal metabolism, but are neutralized by antioxidants. However, when there is additional production regarding ROS and deficiency in an antioxidant system, oxidative stress occurs. raised DNA damage and mutations in genes (Kang, 2002). Free Radicals (oxidants) In non-bonding electrons, free radicals tend to interact with other compounds and act as electronic receptors or oxidizing agents. Major oxidants include reactive oxygen species (ROS), nitrogen (RNS), RCS chloride), and sulfur. The most important antioxidant and the main cause of oxidative damage to the vital molecules in the body is ROS. ROS also plays an important role in the formation of interactive species such as

RNS(Nourazarian, Kangari, & Salmaninejad, 2014). One possible clinical application of oxidative stress in cancer is the use of oxidative stress markers as tumor markers. For example, it has been suggested enzyme concerning the nearly important enzymatic antioxidants (Hasan et al., 2012). There are twins main types about SOD in human cells: SOD (Mn-SOD), which is principally localized in PGF2α (ng/ml) were 40.16±3.31 and 30.16±2.34respectively . The difference of the mean between the MDA, SOD and 8-iso-PGF2α levels of the breast cancer patients and the controls were be statistically significant (p value <0.05

Table(1)oxidative stress in patients suffering from breast cancer

Concentration	Patients	Controls	P value
SOD(pg/ml) (mean±SD)	1530.37±80.4	1851.4 9±93.65	0.022
MDA(ng/ml) (mean±SD)	55.91±3.31	40.61±3.76	0.008
PGF2a(ng/ml) (mean±SD)	40.16±3.31	30.16±2.34	0.024

* p<0.05 significantly raised in Breast Cancer

Table(2) The mean age of the breast cancer patients and control

Subjects	Age (mean±SD)	P value
Control(n=30)	35±3.94	0.360
patients(n=30)	40.45±5.12	

(P>0.05) denote to non-significant .

SOD location key position within the anti oxidative network is of marked pathophysiological importance(Hasan et al., 2012). It was found that this antioxidant phase decreased in breast cancer patients due to increased reactive oxygen species with comparative control (Sahu et al., 2015). These results have shown that very weak that the blood SOD stage in breast cancer may be useful as a marker for the tumor (Noda & Wakasugi, 2001).Dismutase superoxide(SOD)

mitochondria, or Cu/Zncontaining SOD (Cu/Zn-SOD), which is chiefly localized in the cytosol. Mn-SOD (Er, Hou, Tsa, Lee, & Tsai, 2004).

Malondialdehyde (MDA)enzyme of the almost vital on these is (MDA), low-molecular-weight aldehydes derived beside lipid peroxidation processes, (Akbulut, Akbulut, Icli, & Büyükcelik, 2003). Malondialdehyde (MDA), the end-product over macromolecule peroxidation LPO) turning out beside the broad basic degradation over unsaturated swollen acids, do reason cross-linking among lipids, proteins, and nucleic acids (Pande, Negi, Khanna, Khanna, & Khanna, 2011). 8-iso-prostaglandinF2α (8-iso-PGF2α) a gaggle of prostaglandin-like compounds, area unit biosynthesized chiefly from esterified arachidonic acid through a catalyst free radical–catalyzed reaction in vivo that has opened a unique facet of free-radical biology. (PGF2α), apotent prostaglandin that regulate several feminine hormones is related with breast cancer(Basu et al., 2016).

EXPERIMENTAL-:

Blood samples were collected from (30) patients with breast cancer in age (25-80) years and (30) healthy persons as a control group in age (25-80)years . five milliliters of venous blood was taken for each sample and collected in heparinized tube, then centrifuged at 3000 x g for 10 min (Sahu, Varma, & Kachhawa, 2015). Patients with other diseases such as blood pressure, diabetes and other diseases were excluded .In this study determination of plasma MDA ,SOD and8-iso-PGF2α levels used MDA ,SOD and iso-PGF2α kits by used Elisa Technique (Elabscience. USA) . The data for biochemical analyses are expressed as mean and standard deviation (SD). Statistical comparisons were performed by Student's t-test using the SPSS version

Results and Dissection:-

The mean age of the breast cancer patients was 40.45±5.12 years and those of the control group was 35±3.94 years respectively. There was statistically non a significant. The MDA (ng/ml) levels for the breast cancer patients and the controls were 55.91±3.31and 40.61±3.76 respectively .while the SOD (pg/ml) levels were 1530.37±80.4 and 1851.4 9±93.65 and the 8-iso-

polyunsaturated fatty acids. a plus Plasma MDA levels have been reported in breast cancer. Our The results showed an increase in the level of MDA in breast cancer Compared with the controls thus agree with the former Studies and therefore suggest an increase in lipid peroxide In breast cancer patients(Gupta et al., 2012). The role of free radicals, oxidative stress, and lipid peroxidation in carcinogenesis and their contribution to the initiation and progression of the process are well documented . In recent years, using as8-iso-PGF2α a marker of oxidative stress. results showed increase in as8-iso-PGF2α level in breast cancer as compared to controls thus agreeing with the previous studies(Bennett et al., 1989; Dai & Zhu, 2009; Mannello et al., 2007),(Dai & Zhu, 2009) and thus suggesting increased lipid peroxidation in breast cancer patients(Gupta et al., 2012).

4.Conclusion : It found that there was an increase in the concentration of oxidative stress in patients with breast cancer. The MDA (ng/ml) statistically significant(0.008<0.05), the 8-iso-PGF2α (ng/ml) (0.024 <0.05) and the SOD (0.022<0.05) statistically significant .

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inhibitor defense systems in patients with malignant breast growth reduces the level of SOD enzymes cells to synthesize free radicals. Associate in nursing imbalance between the production of free radical enzyme and the defense mechanisms that have long pursued them is believed to be an important issue in nursing cause pathological process of cancer. In addition, we tend to find a statistically vital association between SOD and growth stage and grade (Elyasinia, Chegini, Olfat-Bakhsh, Pasalar, & Aminian, 2014). MDA, one of each lipid peroxide decomposition product, is believed in human plasma and has biological properties, is involved in many disease processes as well as cancer. Several studies have examined the opportunity related to the relationship between lipid peroxidation after cancer and advanced MDA levels in patients with cancer which have been presented in addition to evidence of this relationship (Gönenç, Özkan, Torun, & Şimşek, 2001). The role of free radicals, oxidative stress, and fat Peroxide in carcinogenesis and its contribution To start and develop the process well Documented in recent years, Using MDA as a sign of oxidative stress, there It was a growing interest in studying the role it played Lipid peroxide in the development of cancer. MDA low molecules Weight of aldehyde that can be produced free of charge Radical attack on

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