Estimation of uric acid in Iraqi women with breast cancer

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Abstract

Breast cancer is the most popular cancer among women and one from the central causes of death between women worldwide although not traditionally considered a tobacco-related cancer, many in *vitro* and in *vivo* studies implicate tobacco smoke as a potential breast cancer carcinogen. The results show a significant increase in uric acid at($p<0.05$) in both of benign and malignant groups in relation to the controls, it is also observed that there is a non-significant changes ($p>0.05$) in radiotherapy group. However, smoking shows a non-significant changes of control with patient results of other groups p(>0.05). In conclusion results proposed this is may be a slight increase uric acid levels used to follow the effectiveness of treatment.

Keywords: Breast cancer, uric acid , smoking .

Introduction

Breast cancer is one of the leading causes of death among women worldwide and it is confirmed that early detection and accurate diagnosis of this disease can ensure long-term patient survival,[(1)]. According to ,the world health organization (WHO) , about one third from the costs of cancer medication ,can be reduced, if cases are disclose and treated early[(2)] **.**

Breast cancer is the most prevalent cancer between women and, Cigarette smoking may be a possible injury cause of breast cancer. Many carcinogens are, routinely found in, the, Blood of smokers There are carcinogens coming from cigarettes . Several in vivo and in vitro studies implicate tobacco smoke as a potential breast cancer carcinogen[(3)].

Despite the fact , that uric acid, is considered as, a systemic' antioxidant , its pro-inflammatory property have been, postulated to play an important role in the pathogenesis of cancer [(4)], and has been assumed that uric acid is considered as a strong antioxidants which may therefore protect against cancer by preventing the formation of oxygen roots, which in turn protects against cancer poisoning[(5)].

Materials and methods

The study involve 110 women Divided into four groups (30 of benign group ,30 of malignant group,20 of radiotherapy group, and 30 of control group) have been selected from an age group ranging from (30- 59 years). Samples were obtained from patients undergoing surgery in center of breast cancer in Al-Eluia hospital for woman care, oncology teaching hospital The complete physical examination was done to every patient .The final diagnosis was established by aspiration of cysts (FNA) to check cytology, histology (biopsy) and mammography. the period from September 2016 to January 2017. Serum uric acid estimation using spectrophotometric method includes Procedure was performed according to the pipetting scheme provided by the kit (Biolabo , France).

Pipette into cuvettes	Reagent blank	Sample	Standard
Working reagent	1000 µl	1000 µl	1000 µl
Sample	----	25µl	----
Standard	----	----	25µl
Demineralized water	25µl	----	----

The tubes were mixed well after each addition and incubated for 5 min. at 25 ℃ then the absorbance was measured of the sample and [STD] against the reagent blank (ΔA) at 520 nm.

Calculation of Results

$$\text{uric acid(mg/dl)} = \text{stander concentration(mg/dl)} \times \frac{\text{Abs.of } sample}{\text{Abs.of standard}}$$

Abs. = Absorbance

standard Concentration =10mg/dl

Either women in our study who smoke for a long time and they are still smoking. Statistical test value was calculated by student " Duncan" test by (ANOVA).

Results

The mean value ± SE of UA for control, benign, malignant and radiotherapic groups breast tumor respectively is shown in table (1).The results show a significant changes (elevation)of uric acid at ($p<0.05$) in comparison of benign and malignant groups to the control group, and in comparison of benign and malignant groups with radiotherapy group ($p<0.05$). However a non-significant increase ($p>0.05$) in radiotherapic group compared to the control group.

Table(1): Uric acid (mg/dl) for control, benign, malignant and radiotherapic groups.

Parameters		Groups			
		Cont. N=30	Group 1 Rad. N=20	Group2 Mal. N=30	Group 3 Ben. N=30
Uric acid (mg/dl)	Mean	3.9 abd	4.0 afh	5.0 cgj	4.8 eij
	SE	0.2	0.3	0.2	0.3

►Similar letters: Non- significant difference, (p> 0.05) between means.
►Different letters: Significant difference, (p ≤ 0.05) between means.

Either Smoking The results show a non-significant change of all groups (p>0.05). As shown in table (2)

Table (2): Numbers smoking of patients among control, benign, malignant and radiotherapic groups.

Parameters	Groups				
		Cont. N=30	Group 1 Rad. N=20	Group2 Mal. N=30	Group3 Ben. N=30
Smoking	smoker	15	11	16	7
	Non-smoker	15	9	14	23
	chi-sq.		0.123	0.069	0.069
	DF		1	1	1
	p-value		P>0.05	P>0.05	P>0.05
	chi-sq.			0.014	0.014
	DF			1	1
	p-value			P>0.05	P>0.05
	chi-sq.				1.069
	DF				1
	p-value				P>0.05

* women in our study who smoke for a long time and they are still smoking.

Discussion

Many studies have shown a direct relationship between uric acid and cancer[7]. Despite of , there are, many studies have, shown an evidence, from converse relation among uric acid and cancer,,[5] . Moreover, some results have shown no relationship between uric acid and cancer[6]. There are several studies about the relationship between uric acid in the blood and breast cancer, was patients that rising of uric acid a protective agent due to its properties as antioxidant and this may protect against cancer [7] . Significant rise in uric acid in women who are not treated for breast cancer, which is caused by high stress and may act as a protective factor [8]. Uric acid is found to be significantly elevated in cancer patients compared to normal controls groups, and this can be attributed to the increased nucleic acid turnover and consequent increase in the catabolism of purine bases as

a result of rapid proliferation of tumor cells, as well as massive destruction of surrounding tissues. The non-significant change in the urate levels as a result of exposure to radiotherapy may be related to the increase in the urinary excretion (not measured) or excessive utilization of these antioxidant molecules in scavenging of the excessively produced reactive oxygen species during radiation,[9]. May be a slight increased levels of serum uric acid considered a diagnostic tool for breast cancer. . Urate is the dissolved form of uric acid that eliminates superoxide as well as a radical of hydroxide and can be associated with heavy elements [151].Early diagnosis of breast cancer can be based on the measurement of uric acid. High levels of uric values acid for women with breast cancer who are not treated may indicate the status of oxidation and antioxidants activity in breast tumor. Etiology cancer involvement of oxidant such as hydrogen peroxide (H_2O_2), singlet oxygen ($½O_2$) and superoxide anion (O_2) and hydroxyl radicals ($^{\bullet}OH$) are important [10].

Normal value for uric acid :- (2.4- 6 mg/dl) for female
(3.5-7.2 mg/dl) for male

And smoking It, has been found, that there are, extra than 5,000 chemicals, in cigarette smoke. More than 40 of their ingredients are known to be human and/or animal carcinogens – may be they cause cancer. For example (Amyl Octanoate, Guar Gum, gamma-Heptalactone ,Isoamyl Cinnamate..et.al)[11] .According to the findings from the Collaborative Breast Cancer Study[12].breast cancer survivors who are smokers and continue to smoke after their diagnosis are more likely to die in comparison with those who have never been smokers, Previous studies indicated that epidemiological evidence on the function of active cigarette smoking in the risk of breast cancer was inconsistent [13].yet, recent studies, indicate a modest correlation, among smoking and ,breast cancer, especially, women who smoke ,for a tall time, or smoked for ,a long time before, the first pregnancy,. Canadian studies indicate, a strong link between, smoking and breast, cancer, especially at a younger, aged who continued, for a longer period, as well the, number of cigarettes, smoked per day [3]. This study is based on questionnaire not on laboratory analysis Therefore, the study lacks the accuracy and effect provided by the patients.

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تقدير حمض اليوريك للنساء العراقيات المصابات بسرطان الثدي

الخلاصة:

سرطان الثدي هو السرطان الأكثر شيوعا بين النساء هو واحد من الأسباب الرئيسية للوفاة بين النساء في جميع أنحاء العالم على الرغم من أن لا تعتبر تقليديا سرطان المرتبط بالتبغ، أن العديد من الدراسات في المختبر وفي الجسم الحي تبين انه ممكن أن يكون دخان التبغ سبب محتمل للإصابة، بسرطان، الثدي. أظهرت النتائج وجود زيادة معنوية في حمض اليوريك في المجموعات الحميدة والخبيثة عند مقارنتها مع مجموعة الأصحاء، أن هناك تغيرات غير معنوية في مجموعات العلاج الإشعاعي، مقارنة مع المجموعات الحميدة والخبيثة. ومع ذلك، يظهر التدخين تغييرات غير معنوية عند مقارنة مجموعة الأصحاء مع نتائج المرضى في الختام النتائج المقترحة هذا قد يكون هناك زيادة طفيفة في مستويات حمض اليوريك المقاس لمتابعة فعالية العلاج.

الكلمات المفتاحية: حمض اليوريك ، التدخين ، سرطان الثدي