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Research Article

Estimation of Serum Uric Acid and Bilirubin in Breast Cancer

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Abstract: High level of serum uric acid is important in diagnosis, cancer risk, recurrence and medical management of breast carcinoma. Serum uric acid provides a primary defense against human cancer based upon its capacity to scavenge singlet oxygen and its capacity to inhibit lipid per oxidation. To estimate Level of Serum Uric acid and Bilirubin in Breast cancer patients. The study includes 50 patients of breast cancer of 20-70 year age group along with age and sex matched healthy control. Serum Uric acid and Bilirubin was estimated from all participant and obtained data were analysed statistically by calculating p-value. In results the mean uric acid level increases (8.6 +1.3) with S.D. in study population and found to be significant ($p<0.050$) when compared to healthy control group uric acid level (mean+S.D. = 4.9 + 1.6). Bilirubin level were found to be 0.93 + 1.4 (mean+S.D.) in breast carcinoma patients while in healthy it was 0.86 + 2.6 S.D.(mean+ S.D.) and showed insignificant correlation when compared with control group ($p=0.86$). in conclusion the increased uric acid level may be a diagnostic marker in breast carcinoma as well as it showed oxidative stress in breast carcinoma and role of uric acid as antioxidant. However bilirubin level within normal limits in both groups showed role of bilirubin insignificant in breast cancer.
Keywords: Breast carcinoma, Uric acid, Bilirubin.

INTRODUCTION

Although uric acid can act as an antioxidant, excess serum accumulation is often associated with cardiovascular disease. It is not known whether this is causative (e.g., by acting as a pro oxidant) or a protective reaction taking advantage of urate's antioxidant properties. The same may account for the putative role of uric acid in the etiology of stroke [1, 2]. Uric acid can act as a pro oxidant and it may thus be a marker of oxidative stress, but it may also have a therapeutic role as an antioxidant [3, 4]. Urate, the soluble form of uric acid, can scavenge the superoxide and the hydroxyl radicals and it can chelate the transition metals [5]. Bilirubin reacts with diazotized sulfanilic acid in acidic medium to form pink colored azobilirubin with absorbance directly proportional to bilirubin concentration [2]. Bilirubin formed from hemoglobin breakdown and its role is an antioxidant and to correlate bilirubin-bin with uric acid to examine oxidant-antioxidant status of these parameters in breast cancer women [3]. Breast cancer is most killing disease and common problem in women especially young women [4]. In present study we have estimated serum uric acid and bilirubin in serum of breast cancer patients and in healthy subjects to assess the utility of these parameters in early diagnosis and medical management of breast cancer disease in women.

MATERIAL & METHODOLOGY

The Present study was conducted at Geetanjali medical college and hospital, Udaipur, Rajasthan from May 2014 to June 2015. 50 cases were diagnosed clinically and histo pathologically between ages 20-70 years of breast cancer women. All cases of breast lumps which were send for cytological examination underwent fine needle aspiration cytology (FNAC) proven both benign and malignant cancer were included in the present study. Malignant lesions were confirmed by subsequent mastectomy. Disease of other origin then breast cancer was excluded from the study. Normal healthy control subjects of age between 20-70 years were also included in our study. FNAC smear were fixed in methanol and stained by Giemsa stain. Serum separated from blood of study subjects then uric acid and bilirubin levels were estimated by spectrophotometer method in semi automated auto analyzer. Serum Uric acid was estimated by uricase method and serum bilirubin was estimated by Diazotized sulfanilic acid, Data obtained was analyzed statistically by calculating p-value by using online student t-test calculator.

RESULTS

The Mean concentration of serum uric acid in breast cancer group (Test) is 8.6 + 1.3 mg/dl as compared to 8.6 + 1.3 mg/dl in control group and the

difference among them found to be highly significant.(p-value <0.05).Similarly the concentration of serum bilirubin in breast cancer group(Test) is 0.93 + 1.4 mg/dl as compared to 0.86 + 2.6 mg/dl in control group but the difference among them is not found significant.(p-value 0.86).

Table-1: Age wise distribution of participant

Group	Number(n)	Age Group(yr)	Mean Age
Test	50	20-70	38.31+ 3.2
Control	50	20-70	34.53 + 4

Table 2: Mean concentration of S.bilirubin and S.Uric acid in both group

Group	Number(n)	Test Group	Control Group	P-value
S.Uric Acid (mg/dl) (mean+S.D.)	50	8.6 + 1.3	4.9 + 1.6	**<0.05**
S.Bilirubin(mg/dl) Mean+S.D.)	50	0.93 + 1.4	0.86 + 2.6	**0.8672**

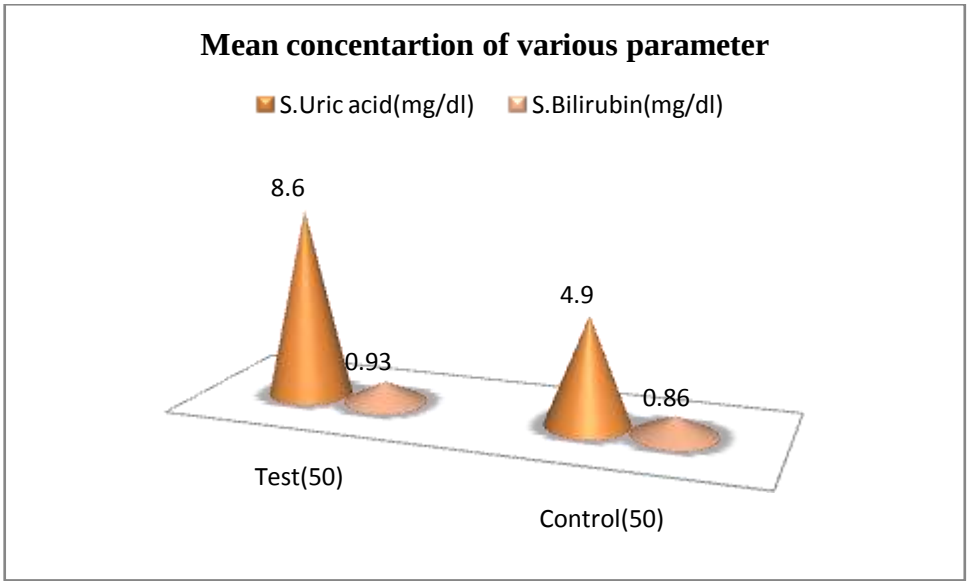

Fig-1: Graphical presentation of various parameters between Test and control group

DISCUSSION

In present study serum uric acid levels increased then healthy control subjects that is similar to reported by other studies and showed that uric acid level may be a protective agent and its functions as antioxidant and elevated serum uric acid risk factor for cancer incidence and mortality in breast cancer of women [8-11]. According to G. Krishna *et al.;* [8] a significant rise in uric acid level in untreated women of breast cancer patients, which may be due to high oxidative stress. In our studies the serum bilirubin level in breast carcinoma women were found to be within normal limits and compared with bilirubin level of healthy control group of breast carcinoma women, it showed insignificant correlation. We have compared bilirubin level in subjects of breast carcinoma reported by other workers, similar results were obtained [9-13]. However Jeime Kepitulnik 2004 reported correlation of bilirubin and oxidative stress due to carcinogenesis in breast carcinoma of women. Antioxidant like uric acid and bilirubin may be important in determining the oxidant and antioxidant status in breast cancer. In the etiology of cancer involvement of oxidant such as hydrogen peroxide (H_2O_2), singlet oxygen ($½O_2$) and superoxide anion (O_2) and hydroxyl radicals (OH) are important and well documented in literature [13].

CONCLUSION

In present study we concluded that increase level of serum uric acid may be due to its protective role in response to increased oxidative stress. The level of bilirubin in normal range may be due to bilirubin scavenge during oxidative load or oxidative stress in breast carcinoma women.

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