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Original Research Article

To Study Pre and Post-Operative Comparison of Serum Prolactin Levels in Women with Carcinoma Breast

Dr. Avneet Singh Setia[1] (Assistant Professor), Dr. Herman Singh[2] (Assistant Professor) & Dr. Manpreet Singh[3*] (Associate Professor)

[1,2]Dept. of General Surgery, Gian Sagar Medical College & Hospital, Ram Nagar, Rajpura, Jansla, Punjab.
[3*]Dept. of Physiology, Gian Sagar Medical College & Hospital, Ram Nagar, Rajpura, Jansla, Punjab.

Corresponding Author: Dr. Manpreet Singh

Abstract

Background & Methods: The aim of the study is to study Pre and post-operative comparison of serum prolactin levels in women with carcinoma breast. After taking the informed, written consent of each subject, detailed clinical history were recorded and general physical and local examination was done.

Results: There was 0-5 time's increase in prolactin levels than normal levels in 11 patients preoperatively. There was 0-5 time's increase in prolactin levels than normal levels in 19 patients postoperatively. There was 5-10 times increase in prolactin levels than normal levels in 10 patients postoperatively. There was more than 10 times increase in prolactin levels than normal levels in 5 patients postoperatively.

Conclusion: In Group A, preoperatively first sample was taken for serum prolactin and lipids. Second sample was taken postoperatively on day 10 for serum prolactin. In Group B, only one sample was taken for serum prolactin and lipid levels. A comparative study of serum prolactin and lipid levels in carcinoma breast patients and normal healthy women was conducted; both groups were selected non-random comparative age group and socio-economic status. Hence our findings were suggested that serum prolactin concentration in preoperative carcinoma breast patients do not differ from that observed in normal control subjects, however postoperatively in 68% of carcinoma breast patient's serum prolactin levels rose, which is a significant raise.

Keywords: Serum, Prolactin, Women, Carcinoma & Breast.

Study Design: Comparative Study.

1. INTRODUCTION

Breast carcinoma is the most common malignancy estimated to develop in women globally. It accounts for 22.9% of all the cancers in women worldwide.1 Breast carcinoma has ranked number one cancer among Indian females with age adjusted rate as high as 25.8 per 100,000 women and mortality 12.7 per 100,000 women. There is a significant increase in the incidence and cancer associated morbidity and mortality in Indian subcontinent as described

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in global and Indian studies.2 Breast carcinoma is 100 times more common in women than in men although men tend to have a poor outcomes due to delay in diagnosis .3
The primary risk factors for breast carcinoma are female sex, advanced age, family history of cancer in a first-degree relative, early menarche (< 12 years), late menopause, late age of first term pregnancy (>30 years) or nulliparity, carcinoma of the contralateral breast or endometrium, atypical hyperplasia or proliferative changes, hyperlipidemia, use of estrogen-progesterone hormone replacement therapy (HRT), current or recent oral contraceptive use, adult weight gain, sedentary lifestyle, alcohol consumption.4
Levels of circulating lipids and lipoproteins have also been associated with high breast cancer risk.5,6,7 According to the density the plasma lipoproteins are classified into four major types: chylomicrons, very low density lipoprotein cholesterol(VLDL- C), low density lipoprotein cholesterol (LDL- C) and high density lipoprotein cholesterol (HDL – C). 8
Preoperative lower HDL-C level were risk factor of breast cancer patients. In multivariate analyses,a decreased HDL-C level showed significant association with worse overall survival.9
Prolactin (PRL), the peptide hormone secreted by the anterior pituitary gland has for long, remained restricted to the field of lactation and infertility.10 there is strong circumstantial evidence for an involvement of Prolactin in human breast cancer.11
Contribution of Prolactin to the pathogenesis and progression of human breast cancer at the cellular, transgenic and epidemiological level has increased. Acting at the endocrine and autocrine/paracrine levels, Prolactin functions to stimulate the growth and motility of human cancer cell. Parous women have been consistently observed to have lower Prolactin levels than nulliparous women.12 some studies have observed that Prolactin levels are decreased following hormonal or chemotherapy in patients with breast cancer.

2. MATERIAL AND METHODS

A total of 100 females among the age group 21-70 years were enrolled in the present study, which were selected by non-randomized method. Out of 100 females enrolled, 50 were those diagnosed with carcinoma breast either on Tru-cut or Fine Needle Aspiration Cytology attending outpatient department (OPD) or admitted to Sri Guru Ram Das Institute of Medical Sciences and Research, Sri Amritsar and 50 were normally health age matched who served as controls were included in the study.
A sample of peripheral venous blood (3ml) was drawn from antecubital vein taking full aseptic precautions in red top vacutainer 1-2 days before surgery and was. Sent to biochemistry laboratory for analysis of lipidogram and serum prolactin levels. Another sample was taken from the same patients after 10 days of surgery and both of the investigations were repeated on each patient. For group B only one sample was analysed for serum prolactin and lipidogram levels.
Group A: comprised of 50 carcinoma breast cases.
Group B: comprised of 50 control cases.

Exclusion Criteria
1) Patients of carcinoma breast who have taken chemotherapy earlier.
2) Post-operative cases and recurrent cases of carcinoma breast.
3) Pregnant and lactating females.

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE12, 2024

3. RESULT

Table 1: Distribution According to Age Group

AGE GROUP (IN YEARS)	GROUP A		GROUP B	
	NUMBER OF CASES	%age	NUMBER OF CASES	%age
21-30	3	6	13	26
31-40	9	18	11	22
41-50	12	24	6	12
51-60	15	30	10	20
61-70	11	22	10	20

The present study shows that among 50 cases enrolled in the study the maximum number of carcinoma breast patients were in the fourth and fifth decades of their life.

Table 2: Menopausal Status

MENOPAUSAL STATUS	GROUP A		GROUP B	
	NUMBER OF CASES	%AGE	NUMBER OF CASES	%AGE
PRE – MENOPAUSAL	15	30	27	54
POST – MENOPAUSAL	35	70	23	46

The present study shows that among 50 cases of carcinoma breast, 70% were in the postmenopausal group.

Table 3: Mean Comparison between Preoperative Prolactin Levels in Group A and Prolactin in Group B.

VARIABLES	GROUP	MIN	MAX	MEAN	SD	P value
PREOP PROLACTIN	A	7.00	92.00	24.36	±20.70	0.084
PROLACTIN	B	7.00	35.00	20.84	±5.26	NS

Statistical Analysis: Independent sample t test. Statistically significant if P<0.05.

The present study shows that the mean preoperative prolactin levels in Group A in comparison to mean prolactin levels in Group B was statistically insignificant.

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE12, 2024

Table 4: Mean Comparison between Preoperative and Postoperative Prolactin Levels in Group A

Group A	MIN	MAX	MEAN	SD	P value
Preoperative Prolactin	7	92	24.36	±20.7	<0.001
Postoperative Prolactin	5	303	99.62	±93.88	S

Our study reveals that the mean postoperative prolactin levels were higher than the mean preoperative prolactin levels and the difference was statistically significant.

Table 5: Increase in Serum Prolactin Levels among Pre and Postoperative Patients

S.PROLACTIN LEVELS	0-5 times	5-10 times	>10 times
Preoperative (no. of females)	11	-	-
Postoperative (no. of females)	19	10	5

There was 0-5 time's increase in prolactin levels than normal levels in 11 patients preoperatively. There was 0-5 time's increase in prolactin levels than normal levels in 19 patients postoperatively. There was 5-10 times increase in prolactin levels than normal levels in 10 patients postoperatively. There was more than 10 times increase in prolactin levels than normal levels in 5 patients postoperatively.

4. DISCUSSION

Breast cancer represents the most common cancer among women and its incidence has been rising rapidly over the past decades. Despite many promising advances over the past several years, our understanding of the initiation, maintenance and metastasis of breast cancer remains far from thorough. There have been many investigations studied for diagnosing and from prognostic point of view, one of them extensively studied is serum prolactin level as it is relative to carcinoma breast. There are various studies comparing the pre and post-operative serum prolactin levels showing significant results13.

Prolactin is a well-defined lactogenic hormone that promotes the breast epithelial cells and differentiation of alveoli. The increased level of serum prolactin has been associated with nulliparity and high mammographic density, the well-defined risk factors for carcinoma breast.In the present study 100 female patients were included, they were divided into two groups, Group A and Group B. Group A included 50 patients with carcinoma breast and Group B included 50 normal healthy women .It was observed in both groups that the age was 21-70 years. Kwa et al14 also reported in their study on 115 patients with breast cancer and 115 matched controls. Mean+-SD prolactin levels were 6.0+-3.7 ng/ml and 5.9+-2.9 ng/ml, respectively. Results found that there was no difference in serum prolactin levels in

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carcinoma breast patients from the normal controls. In our study, similar results were identified with mean+-SD serum prolactin levels in women suffering from carcinoma breast patients and normal healthy women were 24.36± 20.70ng/ml and 20.84 ±5.26ng/ml respectively which show no statistical significant difference between the two groups.
BS Walia et al15 reported in their study that preoperative prolactin levels were 40.65±16.71ng/ml and postoperative prolactin levels were 61.27±22.69 ng/ml, with a significant rise postoperatively. The mean±SD of preoperative and postoperative serum prolactin levels in the present study were 24.36±20.7ng/ml and 99.62±93.88ng/ml respectively and 34 patients revealed significant rise in prolactin levels postoperatively. In the present study there was postoperatively rise of prolactin levels in 68% patients and 10% of the patients showing rise of prolactin levels >10 times.

5. CONCLUSION

In Group A, preoperatively first sample was taken for serum prolactin and lipids. Second sample was taken postoperatively on day 10 for serum prolactin. In Group B, only one sample was taken for serum prolactin and lipid levels. A comparative study of serum prolactin and lipid levels in carcinoma breast patients and normal healthy women was conducted, both groups were selected non-random comparative age group and socio-economic status. Hence our findings were suggested that serum prolactin concentration in preoperative carcinoma breast patients do not differ from that observed in normal control subjects, however postoperatively in 68% of carcinoma breast patient's serum prolactin levels rose, which is a significant raise.

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ISSN: 0975-3583, 0976-2833 VOL15, ISSUE12, 2024

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