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# ASSOCIATION OF SERUM INSULIN LEVEL WITH BREAST CANCER IN POSTMENOPAUSAL WOMEN

**Surgery**

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## ABSTRACT

**Aim :** To assess and compare serum insulin levels in newly diagnosed post-menopausal breast cancer patients and matched healthy controls.

**Material And Method**

**Study area:** Proposed study will be conducted in the Upgraded department of surgery of SMS Medical College, Jaipur .

**Study design:** Hospital based case-control analytic type of observational study

- ***Study population:*** *50 cases of diagnosed post-menopausal breast cancer.*

**Result:**

1) Mean BMI was higher in post- menopausal breast cancer patients (27.62) as compared to control (25.02).
2) Mean Serum insulin level was higher in Cancer cases ( 45.60%) as compared to control (14.87%).
3) In cases mean insulin level was higher in age >65 while lower level of insulin was found in age group <45 year.
4) Mean insulin level was higher in obesity Category (40.18±11.46) while lower level of insulin was found in normal BMI Category (24.22±18.12).

## KEYWORDS

## INTRODUCTION

Breast cancer is the most common female cancer worldwide representing nearly a quarter (25%) of all cancers with an estimated 1.67 million new cancer cases diagnosed in 2012.

Risk of postmenopausal breast cancer is increased in association with obesity and diabetes, both of which are characterized by increased insulin resistance, with consequent increases in circulating levels of insulin and glucose.(1,2) Insulin promotes cell proliferation(3,4) and enhances breast tumor growth.(5,6) whereas glucose may exacerbate insulin resistance(7) favor the selection of malignant clones(8) and provide a growth advantage to cancer cells.(9) Therefore, it is plausible that relatively high levels of insulin may play a role in the etiology of breast cancer. The few prospective studies to date that have directly investigated the association between insulin levels and risk of incident postmenopausal breast cancer have yielded conflicting results.(10–18) However, This study based on a single measurement of Serum Insulin . Analysis of repeated measurements obtained during follow-up may provide greater insight into the role of Insulin in the development of breast cancer and increase the precision of estimates of association. Therefore, we conducted a longitudinal study of breast cancer risk in which Serum Insulin levels were measured .

## II. Patients And Methods

**Study area:** Proposed study will be conducted in the Upgraded department of surgery of SMS Medical College, Jaipur .

**Study design:** Hospital based case-control analytic type of observational study

**Study Population:** 50 cases of diagnosed post- menopausal breast cancer.

## STATISTICALANALYSIS:

The data was coded and entered into Microsoft excel spreadsheet. Analysis was done using SPSS version20 (IBM SPSS STATISTICS inc., Chicago, Illinois, USA) Window software program. The variables were assessed for normality using the Kolmogorov Smirnov test. Descriptive statistics included computation of numbers and percentages. Chi- square test and Mcnamer test were used for qualitative data whenever two or more than two groups were used to compare. Level of significance was set at P<0.05.

**TABLE 1 - BMI Of Cases Compared With Controls**

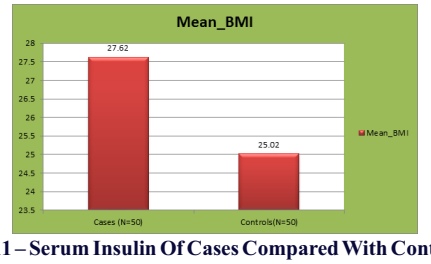



**TABLE 11 – Serum Insulin Of Cases Compared With Controls**

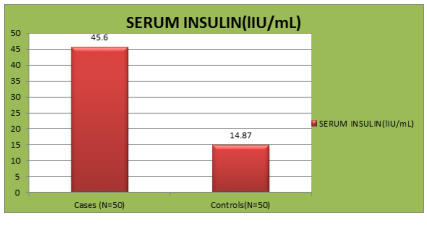


**TABLE 3 - Serum Insuline Level According To The Age Of The Cases**

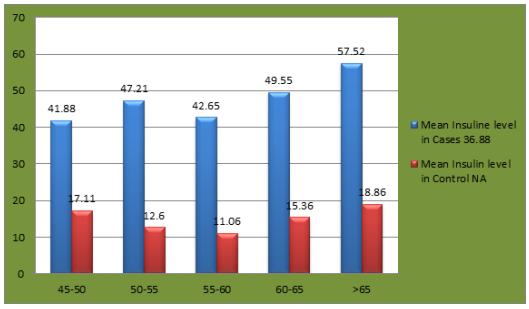
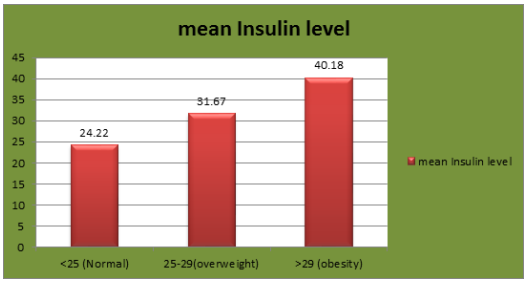



**TABLE 4 - Serum Insulin Level According To The Bmi Category**




## DISCUSSION –

BMI(Body Mass Index)- In Our Study , Mean BMI was found to be 27.62±3.09 while in control it was 25.02±2.32. Difference was found to significant as p value <1 % Mean BMI was higher in cases (27.62) as compared to control (25.02).

- This result comparable with studies done by Cowey S et al[19]

### Serum Insulin Level Of Cases Compared With Controls-

- In our study ,In Cancer cases, Mean Serum insulin level was found to be 45.60±12.42 while in control it was 14.87±7.18 . Mean Serum insulin level was higher in Cancer cases ( 45.60) as compared to control (14.87). Difference was found to significant as p value <1 % .

So there is a statistical significant association between fasting serum insulin and breast cancer risk.

The same association has been reported in the study done by Gunter et al. [18]

### Serum Insuline Level According To The Age Of The Cases -

- Mean insulin level was higher in age >65 while lower level of insulin was found in age group <45 year. Similarly in control group higher insulin level was found in age group >65 while it was lower in 55-60 age group.

These results are comparable with studies done by Kaaks R. et al.[1]

### Serum Insulin level according to the BMI Category-

- Mean Serum insulin level was statistically significant across the BMI third catagory (p value <0.01). Mean insulin level was higher in obesity Category (40.18±11.46) while lower level of insulin was found in normal BMI Category (24.22±18.12).

- In other study also Obesity is Commonly associated with Insulin Resistance and Hyperinsulinemia . : LeRoith D Et al[20]

- **SUMMARY**
- Mean BMI was higher in post- menopausal breast cancer patients (27.62) as compared to control (25.02).
- Mean Serum insulin level was higher in Cancer cases ( 45.60%) as compared to control (14.87%).
- In cases mean insulin level was higher in age >65 while lower level of insulin was found in age group <45 year.
- Mean insulin level was higher in obesity Category (40.18±11.46) while lower level of insulin was found in normal BMI Category (24.22±18.12).

## CONCLUSION

- This study reported statistical significant association between the fasting serum insulin level and post- menopausal breast cancer.
- High BMI and Obesity also has statistical significant association with the post- menopausal breast cancer. All these factors –High BMI, obesity and high fasting Serum Insulin are interrelated and has significant association with the post- menopausal breast cancer. This is the area of further research to frame the proper recommendation. The current recommendation for reducing the breast cancer risk in post- menopausal women is to maintain healthy weight , Eat healthy diet and remain more physically active . Thus avoiding obesity has a beneficial impact on insulin level as well as on oestrogen level as oestrogen hormone imbalance is the major culprit of breast cancer.

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