

**THE EVALUATION OF ESTROGEN AND PROGESTERONE HORMONES LEVELS IN
PRE AND POSTMENOPAUSAL BREAST CANCER WOMEN**¹*Ahmed T. Ahmed and ²Enas H. Hameed¹M.Sc Biology / Teacher at Ministry of Education /Iraq.²Clinical Biochemistry /College of Dentistry /AL-Mustansirya University/Iraq.

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ABSTRACT

The level of Estrogen hormone was decreased significantly in total breast cancer patients, premenopausal and postmenopausal compare with control, while the level of Progesterone hormone increased significantly in breast cancer patients of all stages compare to control group. Serum samples were collected from 140 women were ,50 of these women were control and 90 women were breast cancer patients attending to cancer center in Erbil city from January 2017 to August 2017. Study populations classified into three groups which age ranged from (29-65) years, total subjects, pre and postmenopausal women. The results of estrogen hormone (E.H) were showed a highly significant decrease ($P \leq 0.01$) in total and (pre and postmenopausal) breast cancer patients compare with healthy control. While the results of P.H were showed a highly significant increase ($P \leq 0.01$) in total breast cancer patients compare with healthy control and the results showed that there was no significant difference ($P \geq 0.05$) in Premenopausal and Postmenopausal of breast cancer women compare with control.

INTRODUCTION

Cancer is a group of diseases that cause cells in the body to change and grow out of control. Most types of cancer cells eventually form a lump or mass called a tumor.^[1] The cancer is caused by both external factors (tobacco, infectious organisms, chemicals, and radiation) and internal factors (inherited mutations, hormones, immune conditions, and mutations that occur from metabolism). These causal factors may act together or in sequence to initiate or promote carcinogenesis.^[2]

Breast cancer is the second most common type of cancer after lung cancer.^[3] It is a disease caused by a combination of genetic and environmental factors, numerous risk factors that may be associated with breast cancer have been recognized.^[4]

Estrogens have an important role to influence fertility. They are members of the steroid hormone family produced principally by the gonads and placenta^[5], but in numerous other tissues also such as breast, bone, skin, vasculature, adipose mesenchymal cells, and numerous sites in the brain. They were shown to have negative and positive feedback effects on the hypothalamic–pituitary axis. It was established also that estrogens acted on target organs such as the uterus, hypothalamus, pituitary gland, bone, mammary tissue, and liver, as well as having local actions within the gonads.^[6]

Progesterone an endogenous steroid hormone.^[5] At first, it represented a positive regulator of estrogens action. It is described and used as participant. Based on data, its functional profile should be further evaluated. Progesterone is functionally included in controlled ovarian stimulation protocols.^[7]

The aim of this study to measuring the level of serum estrogen hormone (E.H) and progesterone hormone (P.H) of breast cancer women in total subjects with all stages, premenopausal and postmenopausal women compare to control group.

PATIENTS AND METHODS

After informed consent from each subject, a full information were obtained using a questionnaire that include name, age, residence, education, marital status, last menstrual period (LMP), smoking as well as the following information about:

- 1- Medical history for any previous and recent illness and the type of treatment.
- 2- Family history of breast cancer.
- 3- Family history of other cancer.
- 4- Drugs intake especially combined contraceptive pills and Non-Steroidal Anti-Inflammatory Drugs (NSAIDs).
- 5- Treatment: classified depending on the type of treatment for breast cancer patients as following:

chemotherapy, surgery, radiation, mixed (two or more of treatment).

Serum samples were collected from 140 women were, 50 of these women were control and 90 women were breast cancer patients attending to cancer center in Erbil city from January 2017 to August 2017. Study populations classified into three groups which age ranged from (29-65) years, total subjects, pre and postmenopausal women.

Five milliliters (mls) of venous blood were drawn from each patients and controls by vein puncture, left to clot, and then centrifuged at 4000 r.p.m. for 15 min. Serum was separated and stored at -20 C° until time of analysis. The E.H and P.H levels were detected by electrochemoelimenecence technique via Cobas E411 instrument.

RESULTS

The mean \pm SD of serum estrogen levels for total breast cancer women and control in (table and figure) which were (10.14 \pm 4.24)pg/ml and (57.44 \pm 4.99) pg/ml respectively. The results showed that there was highly significant decrease ($P \leq 0.01$) in total breast cancer women compared to control, while the mean \pm SD of serum estrogen levels for Premenopausal and Postmenopausal in (table and figure) which were (10.05 \pm 4.68) pg/ml and (9.98 \pm 3.61) pg/ml respectively. The results showed that there was a highly significant decrease ($P \leq 0.01$) in Premenopausal and Postmenopausal breast cancer women compared to control.

Table 1: Levels of Estrogen (E.H) pg/ml in Breast Cancer women and control.

Mean \pm SD (pg/ml)	P value
Control	57.44 \pm 4.99
Total	10.14 \pm 4.24
Stage1	11.47 \pm 4.52
Stage2	11.05 \pm 4.00
Stage3	10.14 \pm 5.02
Stage4	8.04 \pm 2.65
Pre-menopausal	10.05 \pm 4.68
Post-menopausal	9.98 \pm 3.61

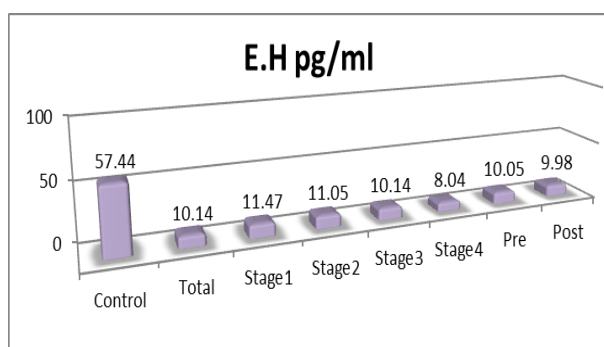


Figure1: Levels of Estrogen hormone (E.H) in Breast Cancer women and control.

The mean \pm SD of serum progesterone levels for total breast cancer women and control were show in (table and figure) which were (1.04 \pm 0.87)ng/ml and (0.70 \pm 0.24) ng/ml respectively. The results showed that there was highly significant increase ($P \leq 0.01$) in total breast cancer women compared to control, while the mean \pm SD of serum progesterone levels for Premenopausal and Postmenopausal of breast cancer women in (table and figure) which were (1.02 \pm 0.97) ng/ml and (1.05 \pm 0.93) ng/ml respectively. The results showed that there was no significant difference ($P \geq 0.05$) in Premenopausal and Postmenopausal of breast cancer women compare with control.

Table2: Levels of Progesterone (P.H) ng/ml in Breast Cancer women and control.

Mean \pm SD (ng/ml)	P value
Control	0.70 \pm 0.24
Total	1.04 \pm 0.87
Stage1	1.03 \pm 0.41
Stage2	1.29 \pm 0.14
Stage3	0.83 \pm 0.37
Stage4	0.73 \pm 0.29
Pre-menopausal	1.02 \pm 0.97
Post-menopausal	1.05 \pm 0.93

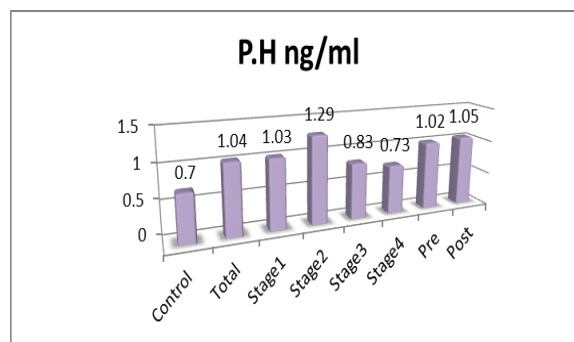


Figure 2: Levels of Progesterone hormone (P.H) in Breast Cancer women and control.

DISCUSSION

Estrogen and Progesterone involved in critical roles for development and progression of breast cancer.^[8] Estrogen play a role in breast cancer initiation and may play a role in breast cancer prevention based on that lead to a significant reduction in breast cancer.^[9] However, reduction of estrogen and progesterone might be helpful in preventing development of breast cancer.^[10]

Anti – estrogen drug use leads to reduction of breast cancer compared to those who did not use the drug. It may be postulated that hormones and genetic together rather than each alone, play a synergistic effect that enhance development of breast cancer.^[11]

The fact that progesterone does not down regulate progesterone-receptors in the breast might contribute to its adverse effects. Progesterone has been hypothesized to the reducing breast cancer risk. Progesterone levels

appear to be a deprecating risk influence for both pre and postmenopausal breast cancer with significant inverse association among progesterone levels and breast tumors risk.^[12]

Progesterone stimulates the development of lobules and alveoli in the breast.^[13] Progesterone effects on breast cancer is suggest it inhibits the breast cancer, the proliferation of breast cancer cell lines.^[14] In one study progesterone alone was administered in patients with breast cancer, where a decrease in growth of tumors.^[15]

CONCLUSIONS

In total, premenopausal, postmenopausal breast cancer patients:-E.H levels were decreased in patients compare to healthy control group. But P.H levels were increased In total, premenopausal, postmenopausal breast cancer patients compare to healthy control group.

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