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**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.997180>Available online at: <http://www.iajps.com>**Review Article****THE ROLE OF PROGESTERONE IN THE PROGNOSIS OF
BREAST CANCER-A REVIEW**Fateme parooei ¹, Mahmood Anbari ^{2*}, Morteza Salarzaci ¹¹ Medical Student, Student Research Committee, Zabol University of Medical Sciences,
zabol, Iran² Zabol University of Medical Sciences, zabol, Iran**Abstract:**

Introduction: According to published statistics by the World Health Organization in 2011, cancer is the second leading cause of death after cardiovascular diseases throughout the world. The American Cancer Society announced in its latest report that out of every eight women, one is diagnosed with breast cancer. The rate of cancer in developed countries is increasing from 1 to 0.2% and in developing countries about 0.5% annually.

Methods: In this review article, the databases Medline, Cochrane, Science Direct, and Google Scholar were thoroughly searched to identify The Role of Progesterone in the Prognosis of Breast Cancer. In this review, the papers published until early January 2017 that were conducted to study The Role of Progesterone in the Prognosis of Breast Cancer were selected.

Results: Progesterone and its receptors connect to the nucleus of the cells of the target tissue to cause a series of changes in the expression of responding to the relevant hormone. The free hormone in the serum goes through the membrane without receiving help from any special protein to connect to its special receptors in the nucleus.

Discussion and conclusion: Investigating these receptors are of more importance especially in patients with breast cancer who have developed the disease at ages prior to menopause and also in high risk groups, because knowing the status of these receptors in these groups of patients increases two to three times the chances of choosing hormone treatments in patients that have the highest level of responding to hormone manipulation.

Key words: Progesterone, Prognosis, Breast Cancer

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INTRODUCTION:

According to published statistics by the World Health Organization in 2011, cancer is the second leading cause of death after cardiovascular diseases throughout the world. The American Cancer Society announced in its latest report that out of every eight women, one is diagnosed with breast cancer (1). The rate of cancer in developed countries is increasing from 1 to 0.2% and in developing countries about 0.5% annually. According to a report by the World Health Organization in 2011, cancer in Iran was reported to be 12% widespread and was recognized as the third most common cause of death (2). Gastric cancer, breast cancer, and colorectal cancer are the three common cancers in Iran respectively. Breast cancer is the first place cancer widespread among women (3). The average age of breast cancer diagnosis in the Western countries is 56 years and in Iran 45 years. New developments in the patients care with breast cancer have increased the overall survival rate of the patients in recent years. This increase in survival has doubled the importance of predictive factors of local recurrence and distant metastases of the disease (4). In addition, it should be noted that the progression or regression of some diseases are not constant over time, as in the stages of recovery or worsening of the disease, the occurrence of some consequences changes the course of the disease, and the disease progress declines and this risk begins to decrease in the 2-5 years after treatment, which make the recovery process speed (5).

METHODS:

In this review article, the databases Medline, Cochrane, Science Direct, and Google Scholar were thoroughly searched to identify The Role of Progesterone in the Prognosis of Breast Cancer. In this review, the papers published until early January 2017 that were conducted to study The Role of Progesterone in the Prognosis of Breast Cancer were selected.

RESULTS:

Progesterone and its receptors connect to the nucleus of the cells of the target tissue to cause a series of changes in the expression of responding to the relevant hormone. The free hormone in the serum goes through the membrane without receiving help from any special protein to connect to its special receptors in the nucleus (6). These receptors, which have characteristics and high tendency to react with progesterone, are divided into the following two groups: PR-A progesterone receptors and PR-B progesterone receptors (7). These receptors exist in the target tissue like breast, genitalia, and also the brain to cause growth and development in breast and genital organs, preparing the breast for pregnancy and lactation, and also to

control sexual behavior. PR-A+ cells decrease in number in mature mammary glands and also after menstrual period is over, while the percentage of PR-B+ cells during different periods of breast growth remain almost stable (8). In a certain percentage of breast cells, only PR-B cells can be found. During the process of breast development and especially during pregnancy, a high percentage of PR-B+ cells become positive also in terms of bromodeoxyuridine, which may be an indicator of direct progesterone stimulatory effects through PR-B in order to proliferate cells. Therefore, it can be concluded that the two isoforms of progesterone receptors, namely PR-A and PR-B, have different capabilities in terms of gene activation in target tissues (9). However, it is not still quite clear through which of these two isoforms the effects of progesterone is applied to the natural and malignant breast tissues.

DISCUSSION AND CONCLUSION:

Prognosis factors are indicators that can help groups that are treating cancer in estimating the outcome of the disease, the patient's longevity, and the period of life without having a disease (10). Treatment-determining factors are the ones that can be used to determine special treatments for certain qualified patients. Determining the status of estrogen and progesterone receptors have received considerable attention from many years ago as one of the most important factors that can play an important role both in estimating the prognosis of the disease and in determining the treatment (11). Progesterone receptors in breast tissue can chose and control special genetic plans that cause the development of mammary glands and the processes involved in starting and the progression of breast cancer (12). As progesterone causes special changes in the normal tissue of the breast during maturation process, pregnancy, and lactation, it also causes major effects on cancer tissues in the breast, such as abnormal proliferation and inducing invasive tumor behaviors (13). Progesterone causes these effects through phosphorylation reactions through which progesterone receptors chose special genes as the target so that progesterone and other mitogen factors like EGF and heregulin can cause abnormal proliferation in breast tissue and change it into cancer tissues (14). Investigating these receptors are of more importance especially in patients with breast cancer who have developed the disease at ages prior to menopause and also in high risk groups, because knowing the status of these receptors in these groups of patients increases two to three times the chances of choosing hormone treatments in patients that have the highest level of responding to hormone manipulation.

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