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ORIGINAL ARTICLE

Antineoplastic Mechanism of Emblica Officinalis Against Breast Cancer, A Humans Clinical Cross Sectional Study

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ABSTRACT

Current study was found that there is a significant changes (<0.005) were observed in both groups regarding reoccurrence of malignancy by considering their MRI and bone scan with passage of time. There were 70 women with breast cancer in Group B and 30 in Group A. 10 g/day emblica officinalis extract was given to the individuals of group B orally for two years their preoperative and Postoperative levels of MRI and bone scan mean standard deviation were (1.81±0.1),(clear) and (0.00±0.00.00±0.0, 0.00±0.0, 0.00±0.0), (clear, all) after 6,12,18 and 24 months respectively, while in Group A, there were 30 women with breast cancer their preoperative and postoperative levels MRI and bone scan mean standard deviation levels were (1.91±1.1), (clear) and (0.12±0.0, 0.70±0.1, 0.93±0.2, 1.00±0.0), (clear, all) after 6,12,18 and 24 months respectively.

Keywords: BRCA1, BRCA2, Emblica officinalis , ellagic acid ,

INTRODUCTION

BRCA1 and BRCA2 are tumor suppressor genes and regulate cell division. Abnormal cell division occurred because of mutation in these two genes [2]. These mutant genes may cause breast cancer from generation to generation [1]. There are only 10% chances to develop inherited breast cancer proved by different studies. The protein which repair damaged DNA, synthesis genetically with the help of BRCA1 and BRCA2 gens [2]. A tiny mutation in these gens can cause abnormal cell growth, which lead to breast cancer. The breast cancer cases are increasing all over the world. Statistically it has seen that 95000 female and 60300 male breast cancer patients were reported in 2020 [3]. Stress, obesity and a sedentary lifestyle are major causes of breast cancer in the population of Pakistan.

Antineoplastic drugs are those compounds which kill carcinogenic cells.al system. It has seen in different studies that antineoplastic drugs destroy both cancerous as well as normal healthy cells of biological system [5]. But researchers have proved in their studies that natural phytochemicals of different medicinal plants only kill abnormal cells of a biological system and normal cells remain safe from their action. Current advancement in research on medicinal plants based on deep pharmacological analysis and mode of action of their ingredients [4].

Now- a- days phytochemicals (natural products) are considered to be more safe and protective against cancer than synthetic products. Medicinal Plant-derived anti-cancer compounds proved excellent and save clinical efficacy [10]. Emblica officinalis (amla) extract has genotoxic and cytotoxic effects. It has chemopreventive, radiopreventive and reactive oxygen species preventive properties. Different scientists jointly developed a proposed mechanism of action of active ingredients of emblica officinalis against cancerous cells and they claimed, it has capacity to prevent, DNA methylation, histone modifications and lipid peroxidation [8].

Emblica officinalis extract has potent tumor repressive properties against various types of cancer both in vitro and in vivo [7]. When aqueous fruit extract of emblica officinalis was tested and analyzed on many different human breast cancer cell lines (MDA-MB-231) the spectrum of its anticancer ingredients were significant and there was a satisfactory resistance and inhibition of cancerous cells growth [6]. Many Researchers found that emblica officinalis very effective and useful for the treatment of breast cancer. Biochemically and physiologically active phytochemicals of emblica officinalis fruit are Gallic acid, flavonoids, ellagic acid, tannins, pectin, and ascorbic acid respectively [9]. Ascorbic acid symmetrically has excellent orientation against cellular toxicity and also provide protection from heat or light by combining with tannins [8].

Breast cancer mostly is of two type i.e. invasive and noninvasive. Majority of registered breast cancer cases are invasive. In these cases cancer has spread from the original site to other places, like nearest breast tissues, lymph nodes and may be to any other part of the body [11]. These abnormal breast cells move in other parts of the body through blood and lymph node. While in the cases of non-invasive breast cancer the cancer cells remain in a particular location and do not spread in tissues, lobules or ducts of surrounding area. Biomarkers play an essential role in the management of patients with invasive breast cancer. These three biomarkers i.e. ER. (Estrogen receptors), PR. (progesterone receptors) and HER2 (human epidermal growth factor receptor) are considered for immunohistochemical tests in the cases of breast cancer [10].

Other tests are computerized tomography scan (CTS), magnetic resonance imaging (MRI) and bone scan while the tumor marker is carcinoembryonic antigen (CEA).

It has seen in different cases that because of modern researches and awareness breast cancer detected on early stages and it remain localized do not spread into lymph nodes [12].

MATERIALS AND METHODS

In this study 100 female patients with invasive ductal carcinoma were selected. All patients had undergone preoperative and postoperative MRI, bone scan and surgery. Hundred patients were divided into two groups i.e. Group A and Group B. In Group A, there were 70 female patients after surgery they do not get chemotherapy because of their economic crisis therefore (10g /day) oral dose of extract of emblica officinalis were given to them for 6 months regularly. In Group B, there were 30 women patients and they do not get chemotherapy nor any oral treatment of emblica officinalis extract after surgery. The size of tumor and metastasis in each patient were measured manually as well as through MRI and Bone scan. Standard mean deviation in size of tumor and spread of cancer in the biological system were measured bio-statistically by applying the model (SPSS).

RESULTS

Group A: without oral treatment of emblica officinalis extract

Parameters n=70	(Mean ± SD) MRI (cm)	(Mean ± SD) Bone scan	P values
Preoperative	1.91±1.1	Clear	0.001
Postoperative 6-month	0.12±0.0	Clear	0.001
Postoperative 12-month	0.70±0.1	Clear	0.002
Postoperative 18 -month	0.93±0.2	Clear	0.005
Postoperative 24 -month	1.00±0.0	Clear	0.006

<0.005

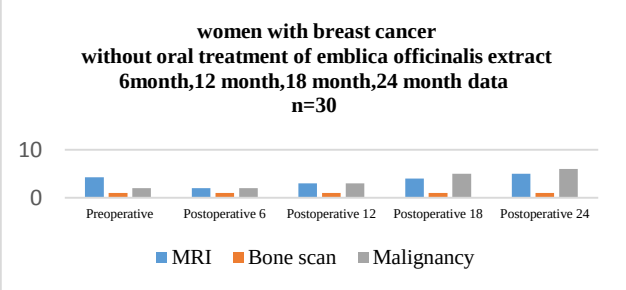

Fig 1:

Group B: with oral treatment of 10g/day emblica officinalis extract

Parameters n=70	(Mean ± SD) MRI (cm)	(Mean ± SD) Bone scan	P values
Preoperative	1.81±0.1	Clear	0.000
Postoperative 6-month	0.00±0.0	Clear	0.000
Postoperative 12-month	0.00±0.0	Clear	0.000
Postoperative 18 -month	0.00±0.0	Clear	0.000
Postoperative 24 -month	0.00±0.0	Clear	0.000

<0.005

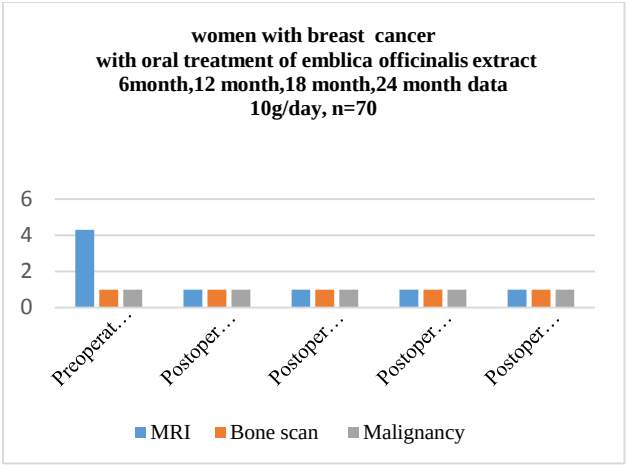

Fig 2:

Diagnosis and treatment of breast cancer now become more advanced because of awareness and modern finding techniques. Therefore the rate of cure has increased than rate of deaths. Through MRI and bone scan early and accurate diagnosis of breast cancer is now available all over the world. In current study researchers adopted these two techniques for diagnosis in each patient. In Group A, there were 30 women with breast cancer their preoperative MRI and bone scan mean standard deviation levels were (1.91±1.1) and (clear) after surgery surgical procedure they do not take chemotherapy of any other alternative medicine. Postoperative levels of MRI and bone scan mean standard deviation were (0.12±0.0, 0.70±0.1, 0.93±0.2, 1.00±0.0) (clear, all) after 6,12,18 and 24 months respectively. In Group B, there were 70 women with breast cancer their preoperative MRI and bone scan mean standard deviation levels were (1.81±0.1) and (clear) after surgery surgical procedure they do not take chemotherapy but take alternative medicine (10g/day) emblica officinalis extract. Postoperative levels of MRI and bone scan mean standard deviation were (0.00±0.00.00±0.0, 0.00±0.0, 0.00±0.0) (clear, all) after 6,12,18 and 24 months respectively. A significant change (**<0.005**) was observed in both groups regarding reoccurrence of malignancy.

DISCUSSION

Advancement in research regarding phytochemicals against cellular toxicity and genotoxicity increased the survival rate and decreased the deaths associated with cancer in all over the world [3,5,7]. The awareness about breast cancer is so effective than treatment. Cancer cells divide faster than the normal cells. Through metastasis abnormal cells can spread to lymph nodes or to the other parts of body [13.6]. Mostly in Pakistani women invasive ductal and invasive lobular carcinoma is very common. In different studies researchers stated and identified that environmental factors, lifestyle, hormonal treatment and abnormal mensuration cycle may increase the chances of breast cancer in women [14]. Different researchers in their studies claimed that the chances of breast cancer among women may increase in case of inherited genes, radiation exposure, obesity, beginning of periods in early age, first

pregnancy in older age, postmenopausal hormone therapy and alcohol drinking respectively [15].

Current study was found that there is a significant changes (<0.005) were observed in both groups regarding reoccurrence of malignancy. There were 70 women with breast cancer in Group B and 10 g/day emblica officinalis extract was given them orally till two years their preoperative MRI and bone scan mean standard deviation levels were (1.81±0.1) and (clear) after surgery surgical procedure without chemotherapy their Postoperative levels of MRI and bone scan mean standard deviation were (0.00±0.00.00±0.0, 0.00±0.0, 0.00±0.0) (clear, all) after 6,12,18 and 24 months respectively while in Group A, there were 30 women with breast cancer their preoperative MRI and bone scan mean standard deviation levels were (1.91±1.1), (clear) and after surgery surgical procedure without chemotherapy and alternative medicine their postoperative levels of MRI and bone scan mean standard deviation were (0.12±0.0, 0.70±0.1, 0.93±0.2, 1.00±0.0), (clear, all) after 6,12,18 and 24 months respectively.

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