

Breast Cancer Risk Factors

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ABSTRACT

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Introduction

Breast cancer is a high prevalent disease in the world because one of each eight women develops this cancer (Dall and Britt, 2017) and is considered as one of leading cause of mortality among women population Akram et al. [1]. The most frequent breast cancer in the world is positive to estrogen Pisteli et al. [2] and responds favorably to antiestrogen therapy, which save many lives, but some women suffer recurrence, probably associated to estrogens independent cancer breast. The estrogens activate different receptors like the alfa, and beta in nucleus, both a transcription factors encoding by different genes, as well as the posttranslational modifications Shull et al. [3]. Later, it was proposed a novel G protein-coupled receptor GPR30 in the membrane of target cells which could be activated by phytoestrogens Molina, et al. [4]. It is interesting to mention that the estrogens receptors activation has been associated with the increase as well as decrease in the breast cancer [5]. Several authors reported that the estrogens, progesterone and synthetic progestin used by menopausal women are associated with risk of breast cancer by DNA damage Asi et al. [6]; Di Sante et al. [7].

Also, an increase in the number of breast cancer cases has been associated to other hormones like the growth hormone, prolactin, androgens and gonadotrophin" Subramani et al. [8]; Bleach and Mclroy [5]. The breast cancer etiologies are multifactorial and have been associated to genetics, environmental changes, hormones and obesity. The breast cancer risk factors have been associated to age, race, age of menarche and menopause, late age at first pregnancy as well as low parity, breastfeeding, benign breast disease, mammographic density, family history of breast cancer, BRCA mutations, oral contraceptives, tobacco, alcohol consume, sedentary habitus and diet Holm et al. [9-12]. Several studies proposed the influence of dietary factor in the breast

cancer incidence, recurrence and prognosis, among them the elevated caloric content refine sugars, saturated fats and alcohol consumption [13,14].

It has been proposed the iron excess intake from red meat processed, plays an important role in the increase of breast cancer risk in postmenopausal women, due to its pro-oxidant role. The oxidant effect of iron can promote the lipid peroxidation and several DNA damage Diallo et al. [15,16]. On the other hand, the environmental changes have been considered a risk factor as the use of plastic products with bisphenol A induces changes in multiple cellular pathways by affinity to the membrane estrogens receptors Shafei et al. [17] as well as the water contamination in industrialized cities Lecompte et al. [18]. Another factor of breast cancer risk is the obesity, because it has been proposed the mortality increase in pre and postmenopausal breast cancer patients from each body mass index (BMI) [19,20]. In this pathology the levels of several members of insulin family, inflammation factors, adipokines like leptin are altered and has been associated to the breast cancer development and progression Schmidt et al. [21].

Furthermore, the inflammation associated to the obesity led the cyclooxygenase 2 (COX-2), prostaglandin and elevate levels of aromatase (derivate of eicosanoids) and estrogens production, which increase of cancer cells proliferation and invasion [22]. Further, some researchers suggested that insulin and adiponectin may induce the cancer development and the invasion, independent of the obesity Minatoya et al. [23]. On the other hand, the inclusion in diet of phytochemicals have recently gained interest as potential therapeutic breast cancer agents, those molecules could have activated the GPR30 and decrease breast cancer [24], (Molina 2018). The resveratrol and other polyphenols in foods have been

considered for the prevention and treatment of breast cancer; this is a controversial, because the continuous use of resveratrol also has been proposed that could stimulate the cancer growth Alamolhodaei et al. [25,26]. Other phytoestrogens like isoflavonas (genistein and daidzin) has been reported in cancer promotion effects (Ziaei and Halaby 2017) by the functions related to estradiol in different breast cancer cells (Basu and Mainer 2018).

Conclusion

Breast cancer risk has been associated to hormones consumption, diet, life style, environment changes and obesity.

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