

Primary prevention of breast cancer: is it possible?

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*“So to be sincere is to be powerful;
of nude that is, shines the Star;
the water says the soul of the source
in the voice of glass flowing from it”.*

Cantos de vida y esperanza. Rubén Darío. 1904.

Cancer is a multifactorial disease. In it coincide several elements that make a mutation, inherited or acquired, generate a series of cellular events that allow the immortalization of the neoplastic cell, causing a malignant tumor.

Different factors associated with the development of breast cancer have been identified and, as in all diseases, there are no modifiable factors, such as sex, age, parity, age of menarche and menopause that increase the risk of developing breast cancer and the patient cannot do anything to modify them. However, there are modifiable factors that are susceptible to manipulation, and it is where primary prevention of this and other neoplasias should focus.

Nulla M Tamimi et al, published an interesting study in the *American Journal of Epidemiology* in December 2016, where the risk attributable to different modifiable and non-modifiable factors for breast cancer was evaluated and the impact they would have on preventive measures, in the reduction of the risk of suffering this neoplasia¹.

To evaluate the influence of these factors on a specific condition or disease, it is useful the *Population Attributable Risk Percentage (PAR%)*, which is defined as the proportion in the incidence of the disease that could be prevented if a factor is avoided, that is to say, what its contribution is and how much this risk would be diminished if its influence is avoided.

In this study, are assessed the factors of risk of 8,421 cases of cancer of breast in a population of 121,700 women belonging to *The Nurses' Health Study*. The following factors were included: family history of breast cancer, personal history of benign breast disease, body mass index (BMI) at age 18, change in weight from age 18, menarche age, parity, and age of first birth. The age of menopause, use of hormone replacement therapy (HRT), level of physical activity, history of breastfeeding, height and alcohol consumption were also included. The PAR % was calculated for each separately and in combination.

During the analysis of the results, it was found that menarche at an earlier age (12 years or less), a lower BMI at age 18, weight gain greater than 2 kg after age 18, alcohol consumption, current use of HRT and greater height are the factors that were associated with an increased risk of breast cancer in menopause.

The authors report that the modifiable risk factor with the highest PAR% is weight gain greater than 2.1 kg from 18 years, with a value of 18.7%, which increases to 23.9% if only positive estrogen receptor (ER+) breast cancer is taken in account, and 10.7% for negative estrogen receptor (ER-) breast cancer. Current use of HRT, but not past use, has a PAR% of 10.1% followed by excessive alcohol consumption with a PAR% of 5.9%. Reducing risk for developing mammary neoplasia, if it were possible to modify each of these factors, it would be equivalent to the percentage of PAR% of each.

If all the modifiable risk factors mentioned above were corrected, an overall PAR% of 34.6% would be achieved, which would mean the prevention of just over one-third of new cases of breast cancer. If ER+ breast cancer is taken into account, PAR% would be 39.7% compared to 27.9% in the case of ER- breast cancer. That is, the modification of these factors has a considerable impact on breast cancer in general and a little more on hormone-dependent breast cancer.

When all risk factors assessed, modifiable as non-modifiable, are considered, the incidence of invasive breast cancer in menopausal women would be estimated at 324 x 100,000 women-years. If the modifiable risk factors were eliminated, the estimated incidence would be 210 x 100,000 women-years, meaning that 114 cases x 100,000 women-years would be avoided, which would imply a reduction of 35% in the incidence of breast cancer, only with primary prevention measures. For this reason the authors recommend that "Public health messages highlighting the importance of minimizing weight gain during adult life, little to no alcohol consumption, breastfeeding when possible, and being physically active are important for many chronic diseases, as well as for breast cancer prevention".

In addition to performing mammography screening as secondary prevention, to achieve an early diagnosis, primary prevention of breast cancer is also possible. In patients at high risk of developing a malignant neoplasm of breast, attributable to a set of non-modifiable factors, it is of utmost importance to minimize those modifiable to decrease the likelihood of breast cancer.

Obesity is a global health problem, responsible for a wide range of diseases. It seems that progressive weight gain until menopause is the most important risk factor for the development of breast cancer. It is therefore necessary to incorporate healthy habits that improve body weight and consequently avoid the development of a number of diseases with high mortality and high rate of disability.

Primary prevention of diseases, including cancer, begins in childhood and adolescence, not only with immunizations, including HPV and hepatitis B, but with the promotion of physical activity and good nutrition for maintain a healthy weight. Primary prevention of cancer is possible and must be promoted.

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