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Finding breast cancer genes

By Dr NOR ASHIKIN MOKHTAR

With more knowledge about genetics, scientists are now beginning to make a stronger link between a woman's genetic make-up and breast cancer risk.

CANCER, particularly breast cancer (as it is the most common cancer in women), has always been a much-feared word among women, primarily because of its unpredictability and uncertainty.

While medical technology has advanced greatly to the point where treatment can provide a good prognosis for many women with breast cancer, the biggest challenge still lies in predicting the unknown: "Will I develop breast cancer?"

Genetic technology now allows doctors to predict a woman's risk of breast cancer, to a certain extent. Knowing your risk level gives you the opportunity to undergo more regular screening so that you can detect any cancerous development at the early phase.

Booby trap

Breast cancer is a disease where certain cells in the breast become abnormal, due to genetic mutations, and multiply without control to form tumours.

The cancerous cells can form in different areas of the breast, such as in the ducts that carry milk to the nipple, or in the glands that produce milk.

Breast cancer does not have definite symptoms, which makes its detection difficult. In some cases, as the cancer progresses, a woman may develop symptoms like a lump or thickening in the breast, a change in the size or shape of the breast, nipple discharge, nipple tenderness or retraction, as well as irritation, dimpling, or scaliness of the skin on the breast.

Breast cancer can spread to other parts of the body, such as the bones, liver, lungs, or the brain.

Breast cancer is believed to be caused not by a single factor, but a combination of lifestyle and dietary factors, hormonal factors, and hereditary or genetic factors.

Only a small percentage of breast cancers have hereditary factors, meaning that they cluster in families due to the genetic mutations that are passed on from generation to generation.

It's in the genes

Genes determine whether you will have brown or blue eyes, or whether you will be tall or short. Genes also play a role in disease development.

There are three specific genes that are known to be associated with the development of breast cancer: BRCA1 gene, BRCA2 gene, and TP53 gene. There are also other genes associated with breast cancer, which carry a lower risk compared to the three named above.

These genetic mutations can be inherited. If a woman inherits these mutations, she has an increased risk of developing breast cancer, and at an earlier age than usual.

The risk is not increased equally in all women who have these genes – for some women, the risk may be higher or just moderate.

While on the topic of risk, it is very important to understand that it is a woman's risk to developing cancer that is inherited; it is not the disease itself that is inherited. A risk simply means a higher possibility, but not a guarantee, of developing the disease.

Some women may inherit the faulty genes, but may never develop breast cancer.

Family factor

A family history of breast cancer (having a mother, sister, aunt, or other relative who has had breast cancer) could mean that you have inherited the so-called breast cancer genes or it could also have happened merely by chance.

Nevertheless, having a family history of breast cancer is a sign that you could be at higher risk. In general, your risk becomes greater if:

● The more blood relatives who have been diagnosed with breast cancer

● The closer the blood relationship of the person with breast cancer

● The younger the age of the relatives when first diagnosed with breast cancer (especially under age 40)

● If the relative had cancer in both breasts

● If a male relative developed breast cancer

● If there is a family history of both breast and ovarian cancers

● If other, less common forms of cancer are present in family members, such as ovarian cancer, a glioma, or childhood adrenal cancer

Assessing risk

Even without a family history or hereditary genetic mutations, a woman still has a “normal” risk of developing breast cancer – due to age, ethnic background, and other environmental factors. Most women have a one in nine chance of developing breast cancer, which is considered normal.

Because of this inherent risk, every woman is encouraged to examine her own breasts every month and look out for abnormalities or changes. Women between 50 and 70 should also go for regular mammography screening, depending on their doctor’s advice.

A healthy lifestyle, with a balanced diet, regular exercise, and weight management is also important for preventing breast and other forms of cancers.

If a woman’s risk is moderate or high, due to family history, the best course of action is to consult a breast cancer specialist.

A woman with moderately increased risk will probably be encouraged to start routine mammography screening at an earlier age. A woman with high risk may wish to consider undergoing genetic testing and counselling to see if she carries the faulty genes mentioned above.

Depending on the outcome of the tests and assessment of the risk, some women are offered regular mammography screening from an early age.

A more extreme option is surgery to remove the breasts and/or the ovaries before cancer develops. This is not a decision to be made lightly, as it only reduces the risk but cannot guarantee a completely cancer-free life. Ask your doctor or specialist for advice and a full risk assessment so that you know the right parth to be taken.

Genes do not dictate your life, but give you a peek at your risk. If you learn how to manage the risk, you do not have to be a victim.

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