Dear Alice,

My father's mother had breast cancer and died around the age of 45 - 50. Can I possibly get it through my father, or can you only contract it through heredity if it's passed on through females?

Answer

Dear Reader,

Losing a family member to cancer may lead you to ask questions about your own risk. An increased risk for breast cancer is, indeed, heritable from either parent (regardless of their sex assigned at birth), meaning that it’s possible you’ve inherited a mutated gene from your father. However, only five to ten percent of breast cancer cases are actually due to an inherited abnormality. Between 85 and 90 percent — the vast majority — of breast cancer cases are instead due to genetic abnormalities that occur as a result of the aging process and lifestyle behaviors. Read on to learn more about breast cancer, its heritability, and lifestyle changes you may consider making to lower your risk.

Breast cancer is caused by a genetic abnormality, which results in the mutation of genes responsible for regulating the growth of cells in the body and keeping them healthy. Cells generally replace themselves, but gene mutations can ‘turn on’ and ‘turn off’ certain genes within a cell, which may lead to the cell dividing without control or order. When this happens, the cell produces identical cells, which collect, form a tumor, and when it occurs in the breast, may ultimately lead to a cancer diagnosis.

Most cases of breast cancer are associated with mutations in two genes: BRCA1 and BRCA2 (breast cancer 1 and 2 genes, which are found on chromosomes 17 and 13, respectively). These genes, which are responsible for repairing cell damage and keeping breast, ovarian, and other cells growing normally, aren’t attached to sex chromosomes, so everyone (regardless of their sex) has them. Mutations in one or both copies of either gene can increase the risk of developing breast cancer (although those assigned male at birth are at much lower risk than those assigned female). Mutations of other genes are also associated with breast cancer but are much less common and don’t appear to increase risk as much as BRCA1 and BRCA2 mutations.
Mutated genes have an equal likelihood of being passed to children through mothers and fathers. However, if a family member has a genetic mutation linked to breast cancer, this doesn’t mean you’re guaranteed to inherit it. Several factors increase the likelihood of having a genetic mutation linked to breast cancer, such as:

- Blood relatives on either side of the family have had breast cancer diagnosed before age 50
- Both breast and ovarian cancer on the same side of the family or in a single person
- Two or more primary types of BRCA1- or BRCA2-related cancers in a single family member
- Women in your family have had cancer in both breasts
- Multiple breast cancers in the family
- Ashkenazi Jewish ethnicity

List adapted from the National Cancer Institute [3].

You can find out if you’ve inherited a mutated or abnormal gene through genetic testing. However, this alone won’t tell you if you’re bound to develop breast cancer. If you do have an abnormal gene linked to breast cancer, you may consider adopting certain lifestyle changes aimed at lowering your risk, such as engaging in routine physical activity, limiting alcohol, and eating nutritious foods. A health care provider could help to further inform some of these changes. If you’d like more information, you might find the American Cancer Society [4] and the National Cancer Institute [5] to be helpful resources.

Best wishes,

Alice!

Category:
General Health [6]
Cancer [7]

Related questions

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Resources

Medical Services (Morningside) [11]
Medical Services (CUIMC) [12]
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