Risk Factors and Causes of Cancers in Young Adults

Cancer occurs as a result of changes (mutations) in the genes inside our cells. Genes, which are made of DNA, control nearly everything our cells do. Some genes control when our cells grow, divide into new cells, and die. Changes in these genes can cause cells to grow out of control, which can sometimes lead to cancer.

A risk factor is anything that increases your chances of getting a disease such as cancer. Different cancers have different risk factors. In many cases, it’s not clear what causes the gene changes that lead to cancer.

Inherited gene changes

Some people inherit gene mutations from a parent that increase their risk of certain cancers. In people who inherit such a mutation, this can sometimes lead to cancer earlier in life than would normally be expected. Examples include:

- **BRCA gene mutations**, which increase the risk of breast, ovarian, and some other cancers
- **Lynch syndrome** (caused by DNA mismatch repair gene mutations), which increases the risk of colorectal, ovarian, endometrial, and some other cancers
- **Familial adenomatous polyposis** (caused by APC gene mutations), which increases the risk of colorectal cancer
- **Li-Fraumeni syndrome** (most often caused by TP53 mutations), which increases the risk of certain leukemias, sarcomas, and some other cancers

Still, most cancers in young adults are not caused by inherited gene changes.
Acquired gene changes

In older adults, the gene changes that lead to cancer are often acquired over a person’s lifetime. Some of these changes occur for no obvious reason. But many cancers are linked to lifestyle-related risk factors such as smoking, being overweight, eating an unhealthy diet, not getting enough exercise, and drinking too much alcohol. Exposures to things in the environment, such as radon, air pollution, chemicals in the workplace, or radiation during medical tests or procedures, also play a role in some adult cancers.

These types of risk factors usually take many years to influence cancer risk, so they are not thought to play a large role in cancers in children, teens, or young adults.

Still, there are some known causes of cancer in young adults. For instance:

- Exposure to ultraviolet (UV) light\(^2\) from the sun or from tanning beds can increase the risk of melanoma and other skin cancers.
- Infection with some types of human papillomavirus (HPV)\(^3\) can increase the risk of cervical and some other cancers.
- Infection with human immunodeficiency virus (HIV)\(^4\) can raise the risk of non-Hodgkin lymphoma, Kaposi sarcoma, and some other cancers.
- Treatment with chemotherapy or radiation therapy for a childhood cancer can increase the risk of getting a second cancer\(^5\), especially leukemia, later on.

Still, these and other known risk factors probably account for only a small portion of cancers in young adults overall. Many gene changes that lead to cancer in young adults are likely to just be random events that sometimes happen inside a cell, without having an outside cause.

Hyperlinks


References


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