

Overcoming the genetic predisposition to prostate cancer

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Certain genes significantly increase the risk of prostate cancer, especially the more aggressive forms of the disease. Recent research confirms that this increased risk can, however, be greatly reduced by adopting good lifestyle habits.

We are the result of an interaction between the genes bequeathed by our parents (our genetics) and all the modifications that our way of life inflicts on these genes (our epigenetics). This gene-environment interaction influences not only our personality, but also our risk of developing most chronic diseases.

Thus, we can inherit from our parents genes that predispose to obesity, type 2 diabetes, cardiovascular disease or certain cancers, but these genes are very rarely sufficient to catalyze the development of these pathologies on their own.

In most cases, it is rather the combination of a poor diet, a sedentary lifestyle or even certain harmful habits (smoking, excess of alcohol) that will allow these genes to come into action and increase the risk of these diseases.

PROSTATE CANCER

This is especially true for complex diseases like cancer, especially types that show higher heritability, such as prostate cancer.

It is estimated that approximately half of the variability in the risk of prostate cancer is attributable to genetic factors transmitted by heredity (1). Many men are therefore at risk of developing this cancer, as evidenced by the presence of prostatic microtumors detected in 40% of men from the age of 40.

On the other hand, some Asian populations (the Japanese, for example) have an incidence of microtumors in the prostate as high but are nevertheless 10 times less affected by this cancer than Westerners. It therefore seems clear that despite a genetic predisposition to develop prostate cancer, other factors, related to their lifestyle, manage to prevent the progression of these microscopic tumors into mature cancer.

LIFESTYLE PROTECTION

This is particularly well illustrated by the results of an American study carried out on 12,411 men followed for almost 30 years (2).

In this study, the researchers determined the genetic risk of the participants by genotyping (polygenetic risk scores) and examined in parallel their degree of adherence to a healthy lifestyle by examining 4 parameters, namely the maintenance of a normal weight body, regular physical activity, a plant-rich diet and the absence of smoking.



The results confirm firstly that a high poly-genetic risk score drastically increases the risk of prostate cancer, the highest scores being associated with a 5-fold increase in the risk of total prostate cancer and 4 times the risk of metastatic and lethal prostate cancer.

The interest of the study is however to show that these increases in risk are greatly reduced by the adoption of good lifestyle habits, in particular regarding aggressive and lethal forms of prostate cancer.

The researchers have shown that men at high genetic risk, but whose adherence to a healthy lifestyle was the highest, saw their risk of mortality linked to prostate cancer decrease dramatically, compared to those whose way of life was unhealthier.

In practical terms, this means that in men genetically predisposed to developing prostate cancer, the lifetime risk of fatal prostate cancer can drop from 5.6% to 1.6% simply by adopting better lifestyle habits. Everything is therefore not decided at birth, and it is possible to take control of your destiny by modifying your lifestyle to neutralize the negative impact of bad genes.

- (1) Hjelmborg JB et al. The heritability of prostate cancer in the Nordic Twin Study of Cancer. *Cancer Epidemiol. Biomarkers Prev.* 2014; 23(11): 2303-10.
- (2) Plym A et al. A healthy lifestyle in men at increased genetic risk for prostate cancer. *Eur. Urol.* 2022, S0302-2838(22)02342-9.