Healthy Lifestyle May Offset Risk of Lethal Prostate Cancer

Men with a high genetic risk of prostate cancer can reduce their risk of developing a lethal form of the disease by healthy living.

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Men who had a high genetic risk of developing prostate cancer were less likely to develop a lethal form of the disease if they maintained a healthy lifestyle, according to results presented during Week 1 of the virtual AACR Annual Meeting 2021, held April 10-15.

Prostate cancer is the most common non-skin cancer detected in men, and the second leading cause of cancer deaths in men, after lung cancer. Genetic factors account for approximately 58 percent of the variability in prostate cancer risk, explained one of the study's lead authors, Anna Plym, PhD, a postdoctoral research fellow at Brigham and Women's Hospital and Harvard T. H. Chan School of Public Health.

In this study, Plym and colleagues sought to evaluate whether increased genetic risk of prostate cancer could be offset by following a healthy lifestyle. Using a validated polygenic risk score for overall prostate cancer, the researchers quantified the genetic risk of prostate cancer in 10,443 men in the Health Professionals Follow-up Study for whom genotype data was available. They applied a validated lifestyle score for lethal prostate cancer which encompassed healthy weight, vigorous physical activity, not smoking, and high consumption of tomatoes, fatty fish, and reduced intake of processed meat.

In a median follow-up period of 18 years for overall prostate cancer and 22 years for lethal prostate cancer, the researchers identified 2,111 overall prostate cancer cases and 238 lethal prostate cancer cases. The study showed that men in the highest risk quartile according to their polygenic risk score were 5.4 times more likely to develop prostate cancer and 3.5 times more likely to develop lethal prostate cancer than those in the lowest risk quartile.

The researchers then measured the effect of adhering to a healthy lifestyle, and found that among men in the highest-risk quartile, those with the highest healthy lifestyle scores had about half the risk of developing lethal prostate cancer compared with those with the least healthy lifestyle. In this high-risk group, having a healthy lifestyle at the time of study entry was associated with a lifetime cumulative lethal prostate cancer incidence of 3 percent, compared with 6 percent for high-risk men having the least healthy lifestyle and 3 percent for the study population as a whole.

“The decreased risk of aggressive disease in those with a favorable lifestyle may suggest that the excess genetic risk of lethal prostate cancer could be offset by adhering to a healthy lifestyle,” Plym said.

Adhering to a healthy lifestyle was not associated with a decreased risk of overall prostate cancer, nor did it affect men in the lower genetic risk quartiles. Plym said further research is necessary to determine why the benefit was limited to lethal prostate cancer risk in men with the highest genetic risk; one possible explanation is that the genetic variants that contribute to a high polygenic risk score are also the variants with the strongest interaction with lifestyle factors.

The study adds to a wide body of cancer prevention research that shows the benefit of a healthy lifestyle, including not smoking, maintaining a healthy weight, getting regular exercise, and eating a healthy diet.

Plym added that the results of this study underscore the importance of surveillance for those with a genetic predisposition to develop prostate cancer.

“Our findings add to current evidence suggesting that men with a high genetic risk may benefit from a targeted prostate cancer screening program, aiming at detecting a potentially lethal prostate cancer while it is still curable,” Plym said.

Plym noted that the study is observational, and therefore the association between healthy lifestyles and prostate cancer may not be a causal link.

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