New prostate cancer risk score could help guide screening decisions

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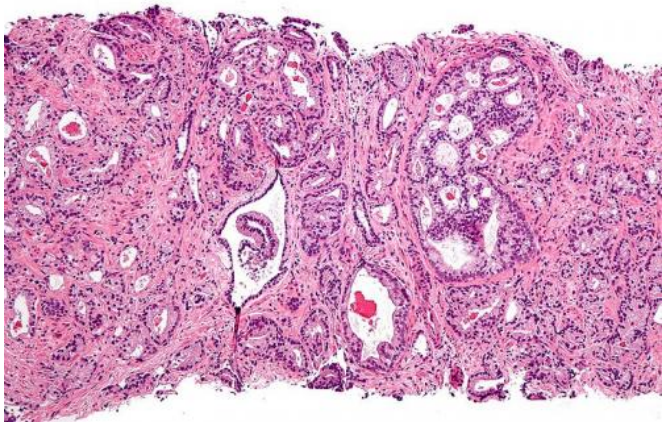

Micrograph showing prostatic acinar adenocarcinoma (the most common form of prostate cancer) Credit: Wikipedia

A new score for predicting a man's genetic risk of developing aggressive prostate cancer could help guide decisions about who to screen and when, say researchers in *The BMJ* today.

Prostate cancer is the most frequently diagnosed cancer in males in developed countries, with over a million new cases and over 300,000 associated deaths estimated worldwide in 2012.

Screening for prostate specific antigen or PSA (a cancer indicator) can lead to early detection and potentially life saving treatment. But many guidelines do not endorse universal screening due to concerns about elevated PSA in men without cancer and overtreatment for men who have cancer but might never develop aggressive disease.

Ideally, physicians would identify and screen patients at high risk of developing aggressive prostate cancer at a young age, but a practical clinically useful tool to predict age of onset is not yet available.

So researchers used data from an international study collaboration (the PRACTICAL consortium) to develop and test a genetic tool to predict age of onset of aggressive prostate cancer and to guide decisions of who to screen and at what age.

They analysed over 200,000 gene variants (known as single nucleotide polymorphisms or SNPs) from 31,747 men of European ancestry with and without prostate cancer and identified 54 associated with increased risk of prostate cancer.

These polymorphisms were incorporated into a survival analysis to estimate their effects on age at diagnosis of aggressive prostate cancer in the form of a hazard score.

The final model was then applied to data from an independent clinical trial of 6,411 men to test ("validate") prediction of survival, free from prostate cancer.

In the independent validation, the hazard score was a highly significant predictor of age at diagnosis of aggressive cancer.

Men in the top 2% of the score had an almost three-fold greater relative risk for aggressive prostate cancer compared with men with average risk.

And the researchers say that, as the score is representative of a man's fixed genetic risk, "it can be calculated once, long before onset of prostate cancer, and substantially inform the decision of whether he should undergo screening."

They point to some study limitations, and say they cannot rule out the possibility that other unmeasured factors may have influenced their results. Nevertheless, they say these results "add to existing data as further evidence that genetic features can predict risk of prostate cancer."

They add that the score "is a relatively inexpensive assessment of an individual man's age specific risk and provides objective information on whether a given patient might benefit from PSA screening."

More information: Polygenic hazard score to guide screening for aggressive prostate cancer: development and validation in large scale cohorts, *BMJ*, www.bmj.com/content/360/bmj.j5757

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