Medical Xpress

Prostate cancer breakthrough could lead to new diagnostic tests and treatments

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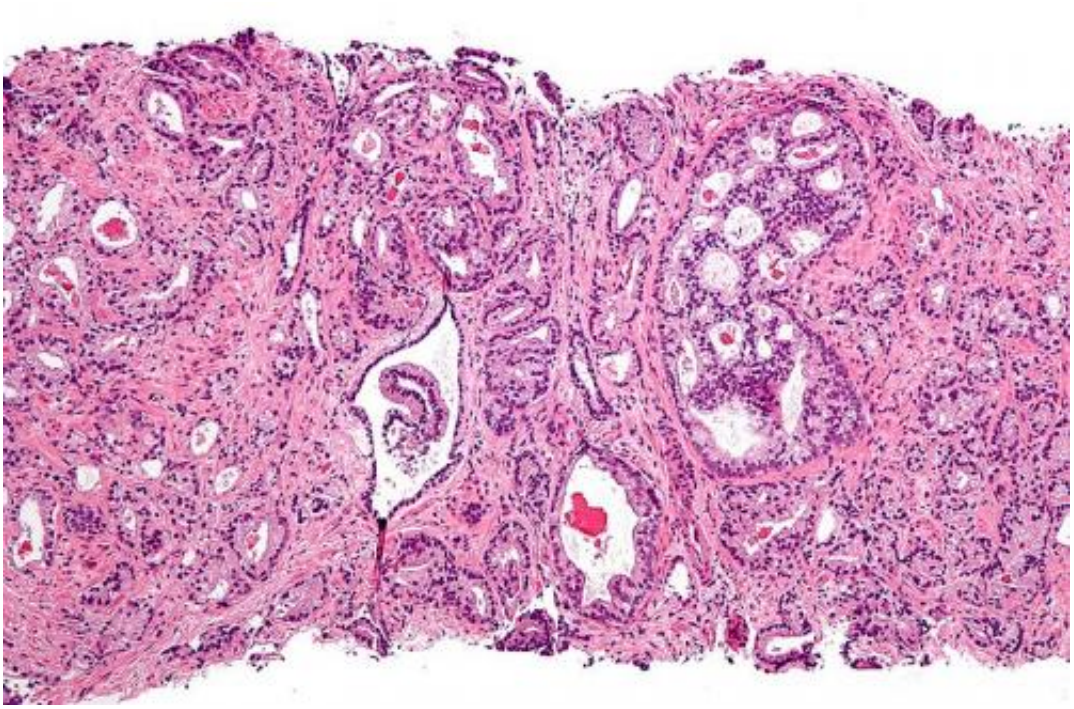

Micrograph showing prostatic acinar adenocarcinoma (the most common form of prostate cancer) Credit: Wikipedia, CC BY-SA 3.0

Prostate cancer patients have been offered hope after scientists at Newcastle University, UK, have identified a new group of molecules that could be targeted to slow tumour growth.

Experts used an advanced screening technique which found hundreds of genes were affected by the male hormone testosterone. It is believed this

could lead to new diagnostic tests and treatments.

Among the 700 genes identified was an important set that add sugar groups - known as glycans - to the surface of prostate cancer cells. This group has never been investigated before.

Results of the research, published in *EBioMedicine*, suggest that testosterone changes glycans to make cancer cells more likely to survive, grow and spread to other parts of the body.

Scientists say there is the potential to target these glycans which could stop the growth and spread of tumours and save lives.

Dr Jennifer Munkley, Research Associate at the Institute of Genetic Medicine, Newcastle University, co-led the three-year research project with Professor David Elliott.

She said: "Our findings are very significant for future treatments as they identify a new group of molecules in prostate cancer which could be targeted therapeutically.

"Now we have identified these glycans we will be able to develop strategies to inhibit them and help patients with this condition.

"Treatments targeting glycan sugar groups have been developed for other types of the illness, such as breast cancer. Our results mean these treatments could also be used for prostate cancer."

Glycans have the potential to be used as part of a diagnostic test to help doctors decide which prostate cancers need treatment.

One in eight will be diagnosed with the condition. It is the most common cancer in UK males, and there is a need to identify how the disease

progresses and for treatment options to be established.

Researchers at Newcastle University used a technique, called RNA-sequencing, to identify the new set of genes that are important.

The genes identified may provide novel ways the disease can be monitored in patients to predict the most aggressive prostate cancers that need to be treated.

The research was funded in partnership between Prostate Cancer UK and the Movember Foundation.

Simon Grieveson, Head of Research Funding at Prostate Cancer UK, said: "There's a desperate need for more treatments for men with advanced prostate cancer, who currently have too few options available to them.

"However, in order to develop new, effective treatments, we need to understand more about the genetic makeup of aggressive prostate cancers and identify what makes them tick.

"This promising research has unearthed a new group of genes which could play a part in cancer cell survival and development, and could pave the way for new treatments in the future.

"Although this work is still in its infancy, and there is a long way to go before we could have a potential new treatment, we will be watching its progression with great interest."

Dr Munkley has been awarded a Newcastle University Faculty of Medical Sciences Fellowship to continue her research.

As each prostate tumour is unique, future studies will look at how to use

glycans as therapeutic targets in personalised treatment.

Case study

One man who knows first-hand the importance of this research is David Forrester, who was diagnosed with prostate cancer four years ago.

The 62-year-old experienced some episodes of what he thought to be urinary infections. His brother had been diagnosed with the illness in 2004 and, therefore, Mr Forrester was monitored by doctors.

He had annual PSA tests - a blood test that can detect the early signs of an enlarged prostate - and his PAS doubled in a short space of time. Mr Forrester was referred to a urologist and underwent a biopsy which confirmed he had prostate cancer.

As a former operating theatre manager, the grandfather-of-three decided to have surgery to remove his prostate. Although he did experience side-effects, he has recovered well and is enjoying life.

Mr Forrester, of West Denton, Newcastle, said: "It is absolutely vital that research is done into prostate cancer and experts gain as good an understanding of the condition as possible.

"With two sons and two grandsons, who are at higher risk of developing the disease, I am especially interested in this research.

"The results of this study offers hope to patients affected by prostate cancer and their families that improved diagnostics and treatment options will be developed in the years ahead.

"It is exciting that Newcastle University is leading the way and it shows what world-class research is going on."

More information: Jennifer Munkley et al, Glycosylation is an Androgen-Regulated Process Essential for Prostate Cancer Cell Viability, *EBioMedicine* (2016). DOI: 10.1016/j.ebiom.2016.04.018

Provided by Newcastle University