

Press release: European Association of Urology congress

Scientists find a switch which may make prostate cancer spread

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Type of work: not peer reviewed/experimental study/human and animal work

Scientists have found a switch which is associated with prostate cancers spreading or forming metastases (secondary tumours). The researchers caution that this work is still at an early stage, and needs further investigation to see if it applies to all prostate cancers. Up to 15% of patients have high risk prostate cancers, potentially leading to significantly increased mortality over time. The work is presented at the virtual European Association of Urology congress.

The researchers, from the University of Leuven in Belgium, worked with a group of 44 patients who had high-risk prostate cancer (see notes for definition). Twenty-five of the patients were cured after treatment, but 19 went on to develop metastatic prostate cancer. The scientists then compared differences in the number of copies of DNA segments in the two groups. They found that these patients who went on to develop metastatic disease had many more copies of the AZIN1 gene, indicating that it was associated with a more aggressive disease.

To test this, the team changed the activity of the AZIN1 gene, found on chromosome 8, in both cell culture and a mouse model. They found that reducing the activity (expression) of the gene resulted in reduced metastases.

Lead researcher, Dr Lisa Moris (Molecular Endocrinology Laboratory, Leuven, Belgium) said:

“We were able to show that the regulation of the AZIN1 gene is closely associated with the risk of the tumour spreading. We need to do a lot more research on AZIN1 to see if the relation with metastases is generally applicable to prostate cancers; there are many different types and causes of prostate cancer, so this finding is still a long way from any clinical application. What we can say is that this finding applies to the patients we tested, who were followed up over a period of 10 years, as well as our mouse and in-vitro models. There are also some initial findings that this gene may have an effect in other cancers.

We are currently looking at what exactly this gene does, to see if we can find a way of regulating it in real-life cancers. This is still a long way from any clinical application, but opening a way to controlling whether tumours risk spread would be a significant step towards controlling prostate cancer.”

Commenting, the EAU’s Adjunct Secretary General responsible for Science, Professor Arnulf Stenzl (Tübingen, Germany) said:

“More than 10 years ago the influence of Antizyme Inhibitor 1 as a small protein for cell transformation and promotion of tumour growth was discovered. Recently a role in the progression and metastasis of a variety of tumours including breast, colorectal, lung and gastric cancer has been suggested. Some of this interest has arisen because of the role of AZIN1 in the methylation of HPV warts and a possible connection to HPV-associated malignancies.

The study by Moris et al. looks like a promising clue for those prostate cancers which are aggressive and metastasizing. At a time when more than 80% of all newly diagnosed prostate cancers are diagnosed in a localized stage, and the value of any treatment may be arguable in some patients, studies like this are important. They may clarify which patients will benefit from immediate and directed treatment, and which will benefit from active surveillance. The results of this study may also give us a clue for targeting AZIN1 to prevent metastasis.”

Professor Stenzl was not involved in this work, this is an independent comment.

Prostate cancer is the most common male cancer, with around 400,000 new cases every year in Europe, with 76,000 deaths in the EU. In the UK, there are over 46,000 new cases of prostate cancer every year, leading to more than 11,000 deaths. Germany has 14,434 annual deaths, France 9041, Italy 7523 (see <https://ec.europa.eu/eurostat/statistics-explained/pdfscache/39738.pdf>, page 13). More than a million European men undergo prostate cancer biopsies every year.

Notes

High-risk: High-risk prostate cancer can be very variable. Even after removal of the prostate, between 4.6% and 20.3% of patients die from prostate cancer within 10 years. A prostate cancer is defined as “high-risk” if it meets one of the following 3 criteria. The level of prostate Specific Antigen (PSA) is 20ng/ml or above, OR when the Gleason score is 8-10 (the Gleason score is taken from microscopic analysis of the tumour cells), OR when the staging is level cT3a or above (meaning the tumour is pushing outside of the prostate).

Malignant: a cancer. A tumour becomes malignant when it spreads outside the original site (in this case, the prostate)

Metastasis: a tumour becomes metastatic when it spreads to a secondary site distant from the original tumour.

The 35th European Association of Urology conference takes place online from 17-19 July, 2020. This replaces the physical conference which was scheduled to take place in Amsterdam. The EAU conference is the largest and most important urology congress in Europe, with up to 14,000 attendees. Conference website <https://eaucongress.uroweb.org/>