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Urine test could lead to better treatment of bladder cancer

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Researchers at the University of Birmingham believe that a simple urine test could help to guide clinicians in the treatment of bladder cancer patients.

Being able to reliably identify those patients with the most aggressive cancers early via urine tests, and expediting aggressive therapeutic strategies, may significantly improve outcomes. The scientists believe that the validation of two urinary biomarkers could spell a new way of tailoring treatment.

Patient management has changed little over the last three decades, so it is hoped that this research, published in *British Journal of Cancer*, will prove to be a step forward for the field with a view to providing improved care for each patient.

Dr Douglas Ward, from the University of Birmingham, explained, "There is an urgent need for prognostic biomarkers that could guide patient management. If such a test could be delivered, in a non-invasive way, it could make treatment much more efficient and that can only be a good thing."

Although a number of prognostic markers have been reported for bladder cancer, they are not currently used in the clinic. These markers are either based on nucleic acids (such as gene expression and mutation profiles) or protein expression levels; and as such require expensive and invasive analysis of tumour tissue via complex laboratory tests.

Previous research by the team used shotgun proteomics, a means of analysing the proteins in complex biological and clinical specimens, to identify the proteins released by cancer cell lines and generate candidate markers for developing a non-invasive urinary test.

This paper identified two prognostic urinary biomarkers, epidermal growth factor receptor (EGFR) and a protein, epithelial cell adhesion molecule (EpCAM), and validated them in over 400 clinical samples.

Both urinary EGFR and EpCAM were found to be independent predictors of bladder cancer-specific survival and have prognostic value over and above that provided by standard clinical and pathological observations. Higher levels of the biomarkers correlated with more aggressive cases of cancer and those with poor survival.

Measuring the biomarkers could therefore represent a simple and useful approach for fast-tracking the investigation and treatment of patients with the most aggressive bladder cancers.

Such tests would be useful in both newly-diagnosed patients and existing patients who receive a cystoscopic diagnosis of recurrence during surveillance.

Furthermore, identifying patients with the least aggressive disease may enable a refinement of surveillance strategies according to risk. It could mean reduced visits to a clinician, or even discharging patients from specialist care sooner than expected.

Mr Rik Bryan, from the University of Birmingham added, "These biomarkers alone cannot be used to diagnose bladder cancer, but there is immense value in being able to easily and independently indicate the prognosis of the disease in order to guide treatment and decide whether more or less aggressive management is required."

Each year approximately 100,000 patients in the UK undergo investigation for haematuria, the cardinal symptom of urinary bladder cancer. Around 10,000 of these patients are subsequently diagnosed, and 5,000 will ultimately die from the disease.

Urinary bladder cancer is one of the most expensive malignancies to manage on a per patient basis, with a total annual cost to the NHS of around £65m.

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