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University scientists develop urine test for cancer

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Scientists at the University have developed a ground-breaking technique that uses a urine test to help to diagnose adrenal cancer.

The test, which enables endocrinologists to distinguish between harmless and cancerous tumours, uses a biomarker tool to measure excreted levels of steroid hormones which are produced by the adrenal glands.

The breakthrough is reported online today in the ***Journal of Clinical Endocrinology and Metabolism (http://jcem.endojournals.org/)*** .

'This is the first urine test for this application; we can detect the "hormone fingerprint" of a tumour and diagnose cancer faster and more efficiently than with costly imaging procedures,' reports **Professor Wiebke Arlt (/staff/profiles/cem/EDM/Arlt-Wiebke.aspx)** , who led the collaborative Medical Research Council-funded study with Professor Paul Stewart at the University's Centre for Endocrinology, Diabetes and Metabolism.

Adrenal tumours affect around two per cent of the UK adult population and are more common with age. Hard to detect, they are often picked up from routine CT scans for other conditions. It is estimated that up to ten per cent of 70-80 year-olds have an adrenal tumour without realising.

A small but significant number of adrenal nodules will prove cancerous. Adrenal cancer is an aggressive disease, mainly occurring in middle-aged adults. Because of the glands' location deep in the body, most cancerous tumours are not found until they are large and have metastasized (spread) to surrounding tissue via the lymph system and blood. In spite of surgery, survival rates remain poor.

Professor Arlt explains: 'The imaging procedures and blood tests currently in use for diagnosing adrenal cancer have poor sensitivity and specificity and often cannot tell the difference between benign and malignant tumours, while biopsies are fairly non-informative.'

Many patients end up undergoing multiple scans, which are not only time-consuming and expensive but expose the patient to repeated episodes of radiation.

The Birmingham team used gas chromatography mass spectrometry to measure and compare multiple steroid metabolites in urine samples from all over the UK and Europe, in collaboration with the European Network for the Study of Adrenal Tumours (ENS@T). Computational analysis of results produced profiles of benign and malignant tumours, enabling the most informative biomarkers to be identified.

The test will now be offered via the University's joint venture company Bioscience Ventures Ltd.

Professor Arlt adds: 'The next step is the validation of our diagnostic test in clinical practice, which is planned soon, hopefully supported by the NIHR (National Institute of Health Research).'

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