

Blood test can guide treatment for most aggressive prostate cancer

7 July 2020



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Scientists have developed a simple blood test that can show which men with the most aggressive type of prostate cancer should respond to conventional therapy, and those who need other options.

Researchers from Peter Mac and the Monash University School of Clinical Science, in collaboration with Chris O'Brien Lifehouse, have joined forces with California-based biotechnology company, Predicine, to apply a first-in-class liquid biopsy for men with metastatic castration-resistant [prostate cancer](#) (mCRPC).

From as little as 10ml of blood, the [test](#) can simultaneously profile the circulating DNA and RNA which is shed by [cancer cells](#), offering important insights into the make-up of the cancer and treatments most likely work.

Nearly 20,000 men are diagnosed with prostate cancer every year in Australia, making up a quarter of all male cancer diagnoses, and mCRPC is the

most aggressive form accounting for over 3000 deaths from this disease every year.

Metastatic prostate cancer has spread beyond the prostate, and it is "castration-resistant" if progression continues despite the patient starting therapy that deprives the cancer of androgen hormones, such as testosterone.

"While advances in therapeutic strategies have significantly improved quantity and quality of life for men with mCRPC, there remains a pressing need to find predictive and prognostic biomarkers," explains Prof. Arun Azad, senior author on the study and medical oncologist at Peter Mac.

"These blood tests, also called liquid biopsies, have emerged as a minimally-invasive alternative to conventional biopsy for interrogating the prostate tumor genome. Liquid biopsies have demonstrated strong congruence with tumor biopsies, whilst simultaneously encapsulating the genomic complexity often seen in mCRPC."

In this study, published in the journal *European Urology*, researchers applied Predicine's cell-free DNA and cell-free RNA next generation sequencing liquid biopsy technology to detect whether changes to the Androgen Receptor (AR) gene have occurred within mCRPCs.

They used this to test the blood of Australian men with mCRPC prior to treatment, accurately detecting some form of AR alteration in over half of patients.

"We found that abnormalities in the AR gene detected in the blood of men with [advanced prostate cancer](#) were associated with poor responses to available drug treatments and reduced survival," says Azad. "This information could be used to better guide treatment of advanced prostate cancer."

A simple test to detect AR abnormalities would help doctors determine optimal treatment selection, better design innovative clinical trials, and aid in discussions with patients and caregivers around realistic and expected outcomes.

The study results were further validated in a second cohort of [prostate](#) cancer patients in the United States.

The new liquid biopsy test from Predicine is also more informative than previous tests as it analyzes two types of genetic material—DNA and RNA—to give a more in-depth and accurate insight into AR abnormalities within the [cancer](#).

More information: Heidi Fettke et al. Combined Cell-free DNA and RNA Profiling of the Androgen Receptor: Clinical Utility of a Novel Multianalyte Liquid Biopsy Assay for Metastatic Prostate Cancer, *European Urology* (2020). [DOI: 10.1016/j.eururo.2020.03.044](#)

Provided by Peter MacCallum Cancer Centre

APA citation: Blood test can guide treatment for most aggressive prostate cancer (2020, July 7) retrieved 30 October 2022 from

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