Blood test may give early warning of skin cancer relapse

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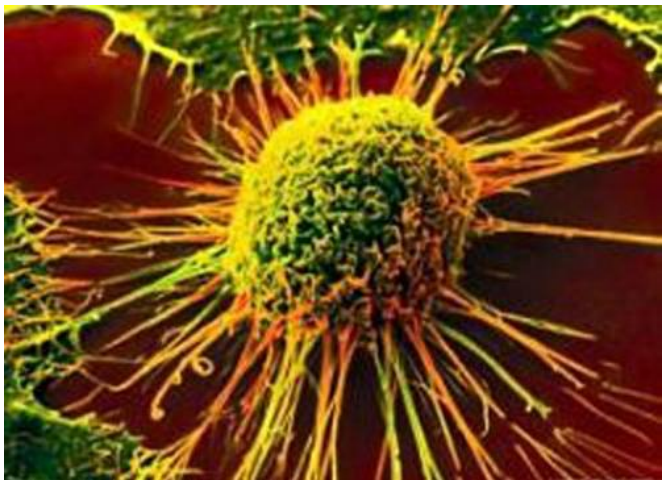

A blood test may be able to sound early warning bells that patients with advanced melanoma skin cancer are relapsing, according to a study published in the journal *Cancer Discovery* today (Monday).

Scientists from the Cancer Research UK Manchester Institute studied the DNA shed by tumours into the bloodstream - called circulating tumour DNA - in blood samples from seven advanced melanoma patients at The Christie NHS Foundation Trust.

In this early work they found they could see whether a patient was relapsing by tracking levels of circulating tumour DNA. And they found that new mutations in genes like NRAS and PI3K appeared, possibly causing the relapse by allowing the tumour to become resistant to treatment.

Most melanoma patients respond to treatment at first but their cancer can become resistant within a year. It is hoped that these approaches will allow doctors to use circulating tumour DNA to tailor treatment for individual patients to get the best result.

Around 40 to 50 per cent of melanoma patients have a faulty BRAF gene and they can be treated with the targeted drugs vemurafenib or dabrafenib. But for many of these patients the treatments don't work, or their tumours develop resistance after a relatively short time. When this happens these patients can be offered immunotherapy drugs including pembrolizumab, nivolumab and ipilimumab. Detecting this situation early could be key to improving their care and chances of survival.

Around 14,500 people are diagnosed with melanoma and more than 2,100 people die from it every year in the UK .Professor Richard Marais, lead author and Cancer Research UK's skin cancer expert, said: "Being able to spot the first signs of relapse, so we can rapidly decide the best treatment strategy, is an important area for research. Using our technique we hope that one day we will be able to spot when a patient's disease is coming back at the earliest point and start treatment against this much sooner, hopefully giving patients more time with their loved ones. Our work has identified a way for us to do this but we still need to test the approach in further clinical trials before it reaches patients in the clinic."

Professor Peter Johnson, Cancer Research UK's chief clinician, said: "One of the sinister things about melanoma is that it can lay dormant for years and then suddenly re-emerge, probably as it escapes from the control of the body's immune system. Being able to track cancers in real time as they evolve following treatment has huge potential for the way we monitor cancers and intervene to stop them growing back. There's still some time until we see this in the clinic but we hope that in the future, blood tests like these will help us to stay one step ahead in treating cancer."

More information: M. R. Girotti et al. Application of Sequencing, Liquid Biopsies, and Patient-Derived Xenografts for Personalized Medicine in Melanoma, *Cancer Discovery* (2015). DOI: 10.1158/2159-8290.cd-15-1336

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