

New blood test detects cancer before it grows

Early diagnosis will boost survival rates

Sam Lister Health Editor

A simple blood test that can detect a cancer before a tumour has taken shape has been developed by British scientists. Due to be introduced in Britain by early next year, it is described as offering a "paradigm shift" in cancer diagnosis.

The test is the first to identify accurately the signals sent out by a person's immune system as a cancer germinates. Research suggests that such signals can be detected up to five years before a tumour is spotted, priming doctors to intervene at the earliest moment when a solid cancer appears.

Scientists described the test, devised initially for lung cancer, as a means of tackling the country's poor record of early diagnosis and disease survival. Detection of lung, pancreas and gullet cancers is often so late that it acts as little more than confirmation of imminent death.

Physical symptoms — the most common trigger for treatment — often will not appear until two thirds of the way through the cancer's development. In the case of lung disease, the tumour can already be the size of a tennis ball. Even the earliest screening detection is only picking up the cancer after more than 20 cell divisions, while death normally comes after about 40.

The new test, developed after 15 years of research by clinicians in Nottingham, and in Kansas, is to be introduced in America later this month. Initially it will help screen smokers at high risk of lung cancer, alongside conventional screening.

The technology, developed by scientists at the University of Nottingham though a spin-out company called Oncimmune, works by identifying how

the immune system responds to the first molecular signs of cancer development. Research has shown that cancers involve irregular cells producing small amounts of protein material called antigens. These prompt the immune system to react, producing large amounts of autoantibodies.

By tracking this activity, and identifying which combination of antigens signals the presence of a particular cancer, scientists have been able to create a reproducible test which simply requires 10ml of blood from a patient.

Professor John Robertson, a breast cancer specialist who led the research, said that it proved that accurate identification of autoantibodies caused by antigens, and the cancer they represented, could be transformed into a simple test. Work is under way on a breast cancer blood test. He said that the technology should improve significantly the detection of 90 per cent of solid cancers.

"The earliest cancer we have seen is a cancer that has been screen detected,

and yet biologically that's late in the road of cancer development," he said.

"We are starting to understand carcinogenesis in a way that we have never seen before — seeing which proteins are going wrong, and how the immune system responds. It's as if your body is shouting 'I've got cancer' way before a tumour can be detected."

Research has involved more than 8,000 individuals in Britain and America. Presentations on the technology are due to be made at the American Society of Clinical Oncology's annual conference in Chicago next week.

Respiratory specialists and family doctors in the US have been piloting the test, which costs £300, on smokers. In many cases it either confirmed suspicions of a cancer, or prompted surgical intervention on a cancerous nodule previously thought to be benign.

Geoffrey Hamilton-Fairley, executive chairman of Oncimmune, said that the test, known as EarlyCDT-Lung, would be available from early 2011 in Britain. Initially it will be supplied to private healthcare groups — at a cost similar to the US rate.

Meetings have already been held with Professor Sir Mike Richards, the national clinical director for cancer, who described the test as "a very exciting concept" with the potential to improve Britain's poor cancer survival rates. Professor Richards said that it would require large-scale randomised trials to prove its benefits across patient populations for use on the NHS.

"Now that the test is shortly to become available [privately] we have to think about doing a wider programme to show that it can save the lives, as we hope it might."

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