

Leading articles



Detecting Cancer

A blood test can pick up early warnings of the disease from the immune system

Britain has one of the worst records in Europe in the detection and early treatment of cancer. Last year government figures showed that the late diagnosis of cancer killed up to 10,000 patients each year who might have lived had their disease been recognised in time. Indeed, for the three deadliest forms, lung, bowel and breast cancer, the death rates have remained stubbornly high for the past 30 years, despite global campaigns against the disease, a vast research effort and frequent government initiatives to boost recovery rates.

The main reason for this is late diagnosis. Survival of the deadly disease depends crucially on how soon it is detected. For many people, especially men, the first time they know they have cancer is when they finally go to a doctor complaining of pains, only to discover that they have a tumour already the size of a golf ball. It is, by then, often too late. Little surprise that globally in about 90 per cent of lung cancer cases the sufferer will die within five years of diagnosis.

The discovery of a simple blood test that can detect a cancer before a tumour has even taken shape is therefore of enormous potential signifi-

cance (see page 3). The test, developed after 15 years research by scientists in Nottingham and Kansas, accurately identifies the signals sent out by a person's immune system as a cancer is germinating in the body. In their early development cancers involve irregular cells that produce small amounts of antigens, "rogue" protein material. These are detected by the immune system, which produces quantities of its own antibody proteins to confront the abnormality. These signals can now be picked up by oncologists long before a tumour has begun to form. And if doctors can tell, from blood analysis, that the body is battling a cancer early in the process of cell division, they can begin an intervention that has a far greater chance of success than one that is prompted only by using a computerised tomography (CT) scan. This procedure normally picks up the disease after it has established itself in the body.

The excitement in the medical world at the viability of the new blood test technology must be tempered by the necessary delay in its widespread application. The test is due to be introduced in the United States later this month. In Britain, Sir

Mike Richards, the national clinical director for cancer, has described it as a "very exciting concept". What matters now is that this concept can be swiftly translated into a screening programme that should be offered as widely as possible to those at greatest risk (such as smokers vulnerable to lung cancer).

Cost will clearly be a factor, and there will be some bureaucratic resistance to any new national programme at a time when the National Health Service is desperately trying to save money. But, apart from the compelling ethical argument about saving lives, the overwhelming practical consideration must be that prevention is much cheaper than treatment. The comparison with heart disease is telling: heart surgery has made vast strides in the past 20 years, but it remains hugely expensive. But the measurement of cholesterol is cheap, easy and reliable — and prescribing statins to those in need can save millions of pounds in unneeded surgery. Britain's late diagnosis of so many cancers is costing this country dear. The chance is now available to remedy this shameful statistic. It must be embraced at once.

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 and American 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 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 through 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,

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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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