

Stem cell indicator for bowel cancer should lead to better survival rates

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Stem cell scientists have developed a more accurate way of identifying aggressive forms of bowel cancer, which should eventually lead to better treatment and survival rates. Bowel cancer is the third most common cancer in the UK.

The UK-led team, headed by scientists from Durham University and the North East England Stem Cell Institute, (NESCI), studied tissue samples from 700 colorectal (bowel) cancer patients and tracked their progress.

They found that patients who had a stem cell marker protein called Lamin A present in their tissue were more likely to have an aggressive form of the disease.

The team concluded that if the marker is detected in the early forms of colorectal cancer, these patients should be given chemotherapy in addition to the surgery normally offered to ensure a better survival predicament.

The team now aims to develop a robust prognostic tool for use in the health service.

The study, funded by the Association for International Cancer Research (AICR) and NHS Research and Development funds, is published in the open-access scientific journal *Public Library of Science One (PLOS One)*.

The Durham University/NESCI scientists worked with colleagues from

The James Cook University Hospital, Middlesbrough, and the Departments of Pathology and Epidemiology at Maastricht University in the Netherlands.

Bowel cancer is the third most common cancer in the UK, where each year more than 36,000 people are diagnosed with the disease. Worldwide over a million new cases of bowel cancer were diagnosed in 2002.

Almost three-quarters of bowel cancer cases occur in people aged 65 and over. The development of disease is linked with diet, lifestyle and environmental factors. (Source of statistics: Cancer Research UK fact sheet).

In colorectal cancer, there are four key stages of the disease. The stage of a patient's cancer is determined by a series of hospital tests, the results of which determine the treatment they are given.

In the two earlier stages, before the cancer involves the lymph nodes, patients normally have an operation to remove the cancer from the bowel. They are rarely given chemotherapy in addition to the surgery. This is because for many patients, who are often elderly and frail, chemotherapy may cause more harm than benefit. It's therefore critical to know when and in whom it should be used.

However, the new study suggests that around one third of these patients will express the Lamin A stem cell marker, which indicates a more serious form of the cancer. These patients, argue the scientists, should be given chemotherapy to target these stem cells, which should ultimately improve their recovery and survival rates.

Study co-author Professor Chris Hutchison, of Durham University and NESCI, said: "Currently the hospitals use a standard test to work out how far the cancer has progressed and then they use this to determine the

treatment the patient should receive. However, we are potentially able to more accurately predict who would benefit from chemotherapy."

Co-author Dr Stefan Przyborski, of Durham University and NESCI, said: "We now aim to carry out more work in this area to develop a prognostic tool which we hope will eventually be for widespread use by the health services in the treatment of bowel cancer."

Professor Robert Wilson, a consultant surgeon and bowel cancer specialist at The James Cook University Hospital, Middlesbrough, also a research team member, said: "We have a very high number of patients with bowel cancer in the north east of England in particular. We know the best treatment for very early and very late disease but there are still a lot of unknowns in-between these two extremes.

"Chemotherapy can be very useful but can have a number of side effects, so we only want to use it where we think there's a good chance it will help. This test will help us determine that."

Mark Matfield, Scientific Adviser with the Association for International Cancer Research, said: "There is a desperate need for more effective treatments for bowel cancer. The problem is identifying which cancers need which treatments. This discovery may show us the way to do that and help save a lot of lives."

Source: Durham University

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