Could stem cells be used to cure Crohn's Disease?

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Scientists are investigating whether stem cells could be used to 're-boot' the immune system and provide a cure for Crohn's Disease.

University of Nottingham researchers are launching a major clinical trial to find out whether stem cells taken from a sufferer's own body could provide effective long-term remission for tens of thousands of people in the UK and many more worldwide.

The Europe-wide trial, which is currently recruiting patients, is the first of its kind in the world to treat Crohn's. The disease is a chronic ongoing condition that most commonly affects the small intestine and colon. It causes inflammation, deep ulcers and scarring to the wall of the intestine, with main symptoms including pain in the abdomen, diarrhoea, fatigue and weight loss.

It affects around 60,000 people in the UK, with 3-6,000 new cases being diagnosed each year. Currently it has no cure. Normal treatment includes steroids, which cannot be taken long-term, and immune suppressant drugs.

But if the Nottingham-led stem cell therapy is successful, Professor Chris Hawkey and colleagues Dr Paul Fortun and Dr Tony Shonde believe that in the future it could just possibly mean a cure for up to 50 per cent of sufferers. The study is featured on a new TV series starting on November 1 on the Community Channel.

Professor Hawkey said: “People with severe Crohn's have very poor quality of life and at the moment there is no cure for them. So what we are attempting to achieve with this trial is something really quite radical and ambitious — and could make a major difference to the lives of a lot of patients.”

Crohn's sufferers are genetically predisposed to the disease, which is first triggered in their body when they come into contact with a particular environmental stimulus. Once this happens, the immune system responds — leading to symptoms that blight the lives of sufferers.

Stem cells hold a potential solution to this problem. As the body's 'master' cells, which can be directed to form any type of tissue, they will be extracted from patients and then re-established in their bone marrow to 're-boot' the immune system, taking it back to a state before Crohn's symptoms were triggered.

Professor Hawkey and his team intend to recruit 48 volunteers who are suffering with the most serious symptoms, from the UK, France, Spain, Germany, Italy, Holland, Belgium, Switzerland and the Czech Republic and Canada. The study is called ASTIC – which stands for Autologous Stem cell Transplant International Crohn's Disease trial.

It features in a television series on potential new treatments for people with serious medical conditions, entitled 'What can science do for me?' The series, which runs over five weeks and starts on the Community Channel on November 1, looks at five people living with a range of chronic conditions including Crohn's, MS and Cystic Fibrosis and takes them behind the laboratory doors to find out just what science can offer them.

The series follows each person's journey as they meet scientists working

at the cutting edge of research into diagnosis, treatment and prevention of their particular condition — research which should ultimately help others with a similar diagnosis. They are introduced to state-of-the-art diagnostic techniques and meet the scientists behind groundbreaking clinical trials and translational research across the UK.

Crohn's sufferer Gareth has had the disease for 21 years, and has had most of his small intestine removed. He has channeled his pain, fear and hope into a stand-up comedy show 'Gutless' and the programme follows him as he finds out about pioneering treatments for his condition including stem cell therapy.

As part of the programme, Professor Hawkey also outlines another current study, which is investigating the use of hookworms to help in the fight against Crohn's.

Professor Hawkey and his colleague Professor David Pritchard, with Dr Fortun and Dr Shonde, are seeking to establish whether the tiny parasite, Necator Americanus, could help to reduce symptoms of Crohn's and aid the search for an effective long-term therapy in patients who suffer from a milder form of the disease.

Scientists believe the gut parasite may be linked to levels of autoimmune diseases, as infestation is thought to 'down-regulate' the immune response. It is thought that the hookworm is able to reduce the immune response in order to survive inside the gut for years at a time. If the mechanism that allows it to do this can be identified, it could be harnessed as a potential new treatment for a number of conditions.

Patients in the hookworm trial, which is already well underway, are deliberately infected with a small number of the gut parasites to see whether it can achieve such positive results.

Both the stem cell and the hookworm studies into Crohn's Disease at The University of Nottingham are funded by the Broad Medical Research Program of The Eli and Edythe Broad Foundation, a philanthropic organisation based in California.

Source: University of Nottingham