



New targeted radiotherapy treatment offers hope to cancer patients

A clinical trial funded by the charity Leukaemia Research is transforming treatment for patients with multiple myeloma, who are receiving a new form of radiotherapy that only targets cancer cells without damaging healthy organs. The promising results of this and other new treatments for patients with blood cancers will be presented to the NCRI Cancer Conference in Birmingham today (6 October).

Myeloma is an as yet incurable cancer of the bone marrow that causes extensive bone damage and a failure of the bone marrow to make healthy blood cells. Treatment involves the use of radiotherapy to clear the bone marrow of tumour cells, followed by a stem cell transplant to replace them with healthy cells. Existing radiotherapy, delivered by X-rays, has proven ineffective at eradicating the cancer and has unpleasant side effects for patients.

Dr Kim Orchard, a senior lecturer in the University of Southampton's School of Medicine, is leading the trial of the new treatment at Southampton General Hospital, where he is also a consultant haematologist. He explains: "The new form of radiotherapy can deliver much higher doses of radioactivity than ever before, directly and accurately to the cancer cells, avoiding damage to healthy organs."

The targeted radiotherapy works by attaching the radioisotope Yttrium-90 to an antibody that targets a protein called CD-66. CD-66 is found on the surface of myeloma tumour cells and some bone marrow cells. As a result, the radioactive Yttrium-90 delivers radiation only to sites of disease in the bone marrow and destroys tumour cells. The patients then go onto receive a stem cell transplant.

Current radiotherapy has a high mortality rate due to the toxicity of the 'total body irradiation', which often causes "collateral damage" to healthy tissues, specifically the liver and kidneys. In contrast, patients in the Southampton clinical trial received radiotherapy by injection, not external X-rays, and results have demonstrated the targeted therapy's effectiveness at delivering high doses exclusively to the bone marrow.

Dr Orchard says: "Patients received four different levels of targeted radiation and even those patients on the highest doses suffered no serious side-effects from the toxicity. Theoretically these high levels allowed us to kill more myeloma cells in patients than ever before, which we hope will lead to better and longer remissions."

The initial trial was so successful that a phase II trial has now opened for myeloma patients, using the highest radiation dose established in the phase I trial. Targeted radiotherapy also offers hope to patients with other types of blood cancers too - a phase I trial using the technique to treat leukaemia patients is now also underway.

Dr David Grant, Scientific Director at Leukaemia Research, said: "The results of this trial are very exciting. Not only is this new radiotherapy far more effective at killing tumour cells it has been shown to be far less toxic for the patient."

Professor Peter Johnson, Cancer Research UK's chief clinician, who also worked on this study said: "This technique holds great promise for making transplants easier and safer. It also offers the hope that by delivering more intensive treatment to the bone marrow the myeloma will be controlled for longer"

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For further information, please contact Henry Winter at Leukaemia Research Press Office on 020 7269 9019, 07824 375880 or email: hwinter@lrf.org.uk

1. "Targeted radiotherapy with an anti-CD66 monoclonal antibody prior to haematopoietic stem cell transplantation: therapy intensification without toxicity" will be presented at the NCRI Cancer Conference in Birmingham on 6 October.

Principal author: Dr K. Orchard, University of Southampton's School of Medicine

2. During the phase I trial at Southampton General Hospital, four radiation dose levels of 5, 10, 25 and 37.5MBq per kg lean body weight of 90Y-labelled anti-CD66 were used, with 5 patients transplanted at each dose level. At the highest radiation dose level up to 40 Gray (Gy) of radiation was delivered to the bone marrow with less than 10 Gy to the liver and less than 2 Gy to the kidneys.

Over 3, 500 people are diagnosed with myeloma in the UK every year. Of those 700 will have an autologous stem cell transplant.

About Leukaemia Research

Leukaemia Research is the only national charity devoted exclusively to improving treatments, finding cures and learning how to prevent leukaemia, Hodgkin's and other lymphomas, myeloma and the related blood disorders, diagnosed in 24,500 people in the UK every year.

Over the next five years, Leukaemia Research urgently needs to raise over £100million to commit to new research. From basic laboratory research to clinical trials with patients, Leukaemia Research is committed to saving lives by funding high quality, carefully selected research throughout the UK. Further information, including patient information booklets, is available from www.lrf.org.uk or on 020 7405 0101.

About the NCRI Cancer Conference

The National Cancer Research Institute (NCRI) Cancer Conference is the UK's major forum for showcasing the best British and international cancer research. The Conference offers unique opportunities

www.ncri.org.uk/ncriconference

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for networking and sharing knowledge by bringing together world leading experts from all cancer research disciplines. The fifth annual NCRI Cancer Conference is taking place from the 4-7 October 2009 at the International Convention Centre in Birmingham.

For more information visit www.ncri.org.uk/ncriconference

About the NCRI

The National Cancer Research Institute (NCRI) was established in April 2001. It is a UK-wide partnership between the government, charity and industry which promotes co-operation in cancer research among the 21 **member organisations** for the benefit of **patients**, the public and the scientific community.

For more information visit www.ncri.org.uk

NCRI members are: the Association of the British Pharmaceutical Industry (ABPI); Association for International Cancer Research; Biotechnology and Biological Sciences Research Council; Breakthrough Breast Cancer; Breast Cancer Campaign; Cancer Research UK; CHILDREN with LEUKAEMIA, Department of Health; Economic and Social Research Council; Leukaemia Research; Ludwig Institute for Cancer Research; Macmillan Cancer Support; Marie Curie Cancer Care; Medical Research Council; Northern Ireland Health and Social Care (Research & Development Office); Roy Castle Lung Cancer Foundation; Scottish Government Health Directorates (Chief

Scientist Office); Tenovus; Welsh Assembly Government (Wales Office of Research and Development for Health & Social Care); The Wellcome Trust; and Yorkshire Cancer Research.

About The University of Southampton

The University of Southampton is a leading UK teaching and research institution with a global reputation for leading-edge research and scholarship across a wide range of subjects in engineering, science, social sciences, health and humanities.

With over 22,000 students, around 5000 staff, and an annual turnover of over £350 million, the University of Southampton is acknowledged as one of the country's top institutions for engineering, computer science and medicine. We combine academic excellence with an innovative and entrepreneurial approach to research, supporting a culture that engages and challenges students and staff in their pursuit of learning.

The University is also home to a number of world-leading research centres, including the National Oceanography Centre, Southampton, the Institute of Sound and Vibration Research, the Optoelectronics Research Centre, the Centre for the Developmental Origins of Health and Disease, the Mountbatten Centre for International Studies and the Southampton Statistical Sciences Research Institute.

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