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Developing adoptive cell therapy for cancer: Lessons from pre-clinical and early phase clinical studies

The cellular immune system can potentially recognise and destroy cancers but there are several barriers to the successful activation of the immune system in patients with existing cancer. Whilst complex, adoptive cellular therapy with tumour specific T cells can be very effective in melanoma where tumour specific T cells are found in the tumour in large numbers. The key in this area is now to establish this therapy as a routine treatment and optimise the process to make it more widely applicable. Randomised trials in this area to assess various facets of the clinical and cell-production processes are on-going/planned. For other cancers tumour specific T cells are less frequently found. Genetically engineering T cells to introduce tumour specific receptors either based on T-cell receptors or antibodies is a general approach to producing large numbers of tumour specific T cells in a routine and clinically applicable way. Pre-clinical models suggest this therapy can be extremely effective but also that there can be toxicity related to normal tissue expression of targeted tumour antigens. There are a range of on-going trials and particularly in haematological malignancies there have been spectacular responses. Unfortunately significant clinical toxicity has also been seen where there the antigen is found on normal tissue. The Manchester group is undertaking trials targeting CEA, CD19 ad as part of the EU ATTACK consortium is targeting NY-ESO1. Results from these and other trials will be presented and reviewed.

Biography

Robert E Hawkins is a medical oncologist with a special interest on the immunotherapy of cancer. He qualified in medicine in 1984 and subsequently undertook a PhD in antibody engineering with Gregory Winter and Cesar Milstein at the MRC Laboratory of Molecular Biology in Cambridge. His PhD described methods of phage antibody selection which have been used to generate and number of clinical products. Since then he has developed a clinical and translational program in immunotherapy of cancer. He has published over 150 papers and is/has been chief investigator on a number on major trials. He has also established a company – Cellular Therapeutics Ltd.

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