

## Multiple Myeloma - a Blood Cancer with remarkable improvements in outcomes.



Multiple myeloma is a cancer of the haematological (blood forming) system that untreated, can within days or weeks cause progressive destructive bone tumours, poor resistance to serious infection and kidney failure. These lead to increasing debility, pain, loss of quality of life, and then, death. Although we know much about its many faceted cause, its heterogeneity makes it unlikely that prevention is feasible in the foreseeable future.

There are about 4,000 new patients diagnosed per year in the United Kingdom and this is increasing as the population gets older.

Until 20 years ago, drugs devised in the 50's improved outcomes, with 50% of patients surviving two and a half years, but almost all still had progressive disease and few survived longer than 5 years.

In the 80's some quite remarkable developments

occurred in Myeloma research. At the Royal Marsden we were the first to devise ways of giving high dose cancer chemotherapy with bone marrow transplants using the patient's own bone marrow stem cells.

The principle of stem cell transplants was based on the use of the newly synthesised biological drugs that

make the body release stem cells into the blood. These can then easily be collected using a centrifuge, in a relatively pure form, and stored frozen. They can be returned, as rescue, after high dose drug treatment to the patient. After two weeks normal marrow function returns, but during this risky period the patients need intensive support, with anti-biotics, anti-fungal, anti-virals and growth factors such as erythropoietin (Aranesp). We have now undertaken about 2000 stem cell transplants exploring variations of this technique, and have some of the best results world wide.

This form of treatment has dramatically improved quality of life and survival. For a group of our patients treated in the 80's almost half the patients lived longer than 5 years; and 30% were alive, well with normal life activities and off all treatment 10-20 years after diagnosis.

But the real breakthrough in myeloma treatment has

occurred in the last decade. We are now able to use biological treatment that have been tailor-made to hit myeloma targets, including the tumour blood vessels, protein degradation pathways and the immune system.

These drugs such as Thalidomide, Velcade, and Revlimid have recent approval, and can be used in a variety of sequences and combinations to trick biologically the malignant cells into regression, whilst preserving normal patient function. It is now increasingly possible to go from diagnosis down a pathway of intermittent treatment over a 10-20 years survival, whilst leading a normal life without needing to be admitted to hospital.

Thus the strategy of myeloma treatment is now turning on its head. Instead of aiming to kill (at almost all costs) the last cancer cell, we now use these targeted therapies to induce in myeloma patients, a state in which we never eradicate the last malignant cell. We turn it into a chronic, symptom-free condition undetectable by normal means.. We intermittently control the disease using treatment that allows increasing numbers of patients to live a normal life span, that is full and symptom free. Increasingly these patients are now dying of natural causes other than myeloma. We term this 'operational cure' even though at a molecular level, in all of these patients we can still detect myeloma.

A key to the success in treating myeloma is that it is delivered by modern Multi-Disciplinary Teams within the hospital unit that cover all aspect of its diagnosis and management. These Units have the support of Clinical Networks and Patient Support Groups, such as Myeloma UK, ([www.myelomaonline.org.uk](http://www.myelomaonline.org.uk)) and a huge world wide collaborative programme using these drugs to work out their best sequence for myeloma patients.

How things have changed for myeloma is illustrated by current patients of mine some of whom run huge businesses, fly planes, ski etc. and a recent patient diagnosed 5 years ago, who is on target for a good degree at Cambridge this summer in Anglo-Saxon history. Amazingly he is 70 years old and was accepted at Cambridge because he interviewed so well, which is a wonderful testament to his well being.

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