RAPID ADVANCES have been made in the last 10 to 15 years in treating multiple myeloma, a mostly incurable type of blood cancer. More patients now are living longer without the disease returning, but benefits from newer drugs and treatments continue to elude those with the high-risk form of the disease.

Up to 50 per cent of patients with high-risk multiple myeloma experience a relapse less than three years after starting treatment, and their five-year survival rate stands at under 30 per cent, compared to 70 per cent for those with the standard-risk form, said Dr Sathish Kumar, Consultant, Department of Haematology, Singapore General Hospital (SGH).

To see what can be done to improve their chances of surviving the disease, Dr Kumar is leading a team of haematologists from SGH and the National University Cancer Institute Singapore (NCIS) to study the efficacy of a different drug combination treatment.

“Central to the study is the idea that patients with high-risk myeloma need a more intensive treatment approach from the beginning. Another idea is that continued treatment ‘maintenance’ may be useful in patients who show even very small amounts of residual cancer after bone marrow transplantation,” he said.

The current standard treatment includes a combination of targeted therapy, steroids, optional chemotherapy, followed by an autologous stem cell transplant. Patients found to be unfit for bone marrow transplant will receive only chemotherapy.

Under the trial, patients follow the same treatment combination but the targeted drug used is a novel agent known as carfilzomib, instead of standard treatment drugs like bortezomib.

The US Food and Drug Administration allows carfilzomib to be given to patients suffering from a relapse of the disease but in Singapore, where it has yet to be approved for standard use, carfilzomib will be offered only to trial participants newly diagnosed with the disease.

“This is based on the fact that if the drug can be good at the time of relapse after having treatment, it’s likely to be more effective if we can use it from the beginning,” said Dr Kumar.

The drug, estimated to cost US$15,000 (about $20,500) per month of treatment, has shown promise in treating high-risk myeloma. Moreover, it has few side effects and is well-tolerated by patients, meaning that patients are more likely to complete a full course.

To gauge how well the trial drug can eradicate cancer cells, a highly specialised technique known as flow cytometry will be done at National University Hospital (NUH) to measure the amount of cancer cells left after treatment. If the minimal residual disease (MRD) indicator tests positive, the patient stands a chance of having the disease recur. Trial participants will then be given the option of further treatment for up to two years.

“When MRD is negative, it means there is no or a very insignificant level of cancer cells left. The current test used is not as sensitive, which is why when someone is deemed to be in remission, he could still have quite a number of cancer cells left,” said Associate Professor Chng Wee Joo, Senior Consultant and Head, Department of Haematology-Oncology, NCIS, and the NUH site investigator of the study.

The ability to measure the very low levels of cancer cells left to decide further treatment is a very new concept and these tests will be done by NUH and Sequenta Inc., a US biotechnology company.

Indeed, the study is one of the few studies in the world to use new technologies to improve outcomes of newly diagnosed high-risk multiple myeloma in a clinical study setting, said Prof Chng.

The researchers, who began recruiting newly diagnosed high-risk multiple myeloma patients in October 2014, aim to study a total of 30 patients.

As the disease is not common, patients will be enrolled from not just SGH and NUH, but also via referrals from other institutions in Singapore.

**DID YOU KNOW?**

100 new cases of multiple myeloma are diagnosed every year in Singapore

Multiple myeloma tends to affect older people after the age of 65

The disease has no identified cause although it is known to affect people who are exposed to petrochemicals and radioactive environments

**How blood cells develop**

- **Myeloid stem cell**
  - Progenitor cells
  - Platelets – Stop bleeding
  - Red cells – Supply oxygen
  - Neutrophils – Fight infections
  - Monocytes – Fight infections

- **Lymphoid stem cell**
  - B-cell – Fights infections
  - Plasma cells – MULTIPLE MYELOMA

- **Stem cell**

- **T-cell – Fights infections**

- **Eosinophils – Role in allergies**

- **Kidney failure**

- **Anaemia, bone fracture**

- **Non-specific like fatigue, bone pain, frequent infections**

- **The disease tends to be diagnosed at the later stages**

- **Its symptoms are vague**

- **The disease tends to affect older people after the age of 65**

- **The disease has no identified cause although it is known to affect people who are exposed to petrochemicals and radioactive environments**