Better matching benefits bone marrow recipients

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A new test for genetic matching in bone marrow transplantation developed by a West Australian specialist is showing dramatic improvements in transplant survival rates according to a Brazilian study.

Former Royal Perth Hospital medical scientist, David Sayer has developed the Gamma block test (TM Gamma Type) over a number of years, with recent improvements simplifying the HLA DNA sequence-based tissue typing procedures and software to become more cost

effective.

He explains the best bone marrow donor is an identical twin, followed by an HLA matched sibling.

Transplants from an unrelated donor are less likely to be successful than matched siblings, resulting in an increased risk of bone marrow graft-versus-host disease, hospitalisation, ongoing reduced quality of life and possibly death.

Dr Sayer says one of the theories behind why a bone marrow transplant from an unrelated donor is not as successful, is because matching is not carried out for the other genes important in immune function.

He says bone marrow matching tests usually focus on six tissue type (HLA) genes. The new technology includes previously unexamined DNA markers to find a better match.

"In between the HLA genes are other genes important in immune function," Dr Sayer says.

"So a donor can be HLA matched, but not necessarily matched for the other genes.

"We have identified a number of genetic markers that act as surrogates for the additional genes and have developed a simple test to identify them.

"Sometimes an identical HLA matched donor is not available. The cool thing about our test is that studies indicate it identifies the best HLA mismatched donor.

New markers can be matched for better transplant

outcome

"A study with a collaborator in Brazil shows that HLA matched donor and patients can be matched or mismatched for the new markers," Dr Sayer says.

That study followed hematopoetic stem cell transplants in 225 patients transplanted with HLA matched unrelated donors in three Brazilian centres between 1996 and 2013.

The unpublished report shows the likelihood of survival at five years post-transplant is almost double when patients and donor were Gamma Type matched and HLA mismatched, compared to Gamma Type mismatched.

It also found the probability of graft-versus-host disease is five times less likely if the if HLA matched donors and patients are also Gamma Type matched, compared with those that are Gamma Type mismatched.

"This is very simple technology that's never been done before," Dr Sayer says.

"Our studies have demonstrated the test can identify a donor that will result in dramatic improvements in survival of the patient," Dr Sayer says.

Dr Sayer's company Conexio Genomics will launch the test at the European Federation for Immunogenetics meeting in Stockholm on June 26.

There are estimated to be more than 20 million people on the international unrelated bone marrow donor register.