

Unrelated and mismatched cord blood transplantation can still help children with deadly conditions

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An unrelated cord blood transplant, even from a mismatched donor, can be effective in treating children with a host of life-threatening diseases and disorders including cancer, sickle cell anemia, and other genetic diseases, according to researchers in the Duke Pediatric Blood and Marrow Transplantation Program. Unrelated cord blood may be easier to obtain than adult bone marrow, allowing for the treatment of more patients.

"We have done a terrific job in this country of increasing the number of volunteer donors listed in the National Marrow Donor Program registry over the past several years," said Vinod Prasad, M.D., a pediatric oncologist at Duke. "But the fact remains that for many patients, finding a matched donor can be difficult. Ethnic and racial minorities have the hardest time finding a fully matched donor."

The researchers will present their findings in an oral presentation at the American Society of Bone Marrow Transplantation in Tampa, Florida, on Friday, February 13, 2009. The study was partially funded by the National Institutes of Health.

"Our study found that using cord blood can be effective, without increased complications, and can provide more matches for patients, including ethnic minorities," said Prasad, who was the lead investigator. "Based on the findings of our study, we believe that unrelated cord blood

transplant should be considered as an option for many of our young patients in need of a transplant."

Bone marrow transplantation has proven to be an effective treatment for thousands of children in the United States each year diagnosed with diseases such as leukemia and sickle cell disease, and inherited metabolic disorders such as Hurler's syndrome. Patients without a suitable match within their families can turn to the bone marrow registry, which currently lists more than seven million donors. Despite that number, however, many patients, particularly ethnic and racial minorities, are unable to find a completely matched donor.

The vast majority of these patients will find a partially matched donor within the public cord blood banks despite a smaller inventory of donor units, Prasad said.

"In order to match a donor to a recipient, doctors compare HLA typing, a test usually performed on a blood sample. In every individual, HLA typing includes the specific genetic make-up at three locations -- within those locations, you are looking at one set from the mother and one from the father, so it ends up to be six-point comparison," Prasad said. "In this analysis of children whose donor units were matched at four of six points, the transplant was successful in many patients, with low incidence of complications. Results were similar to those seen in patients receiving closer matched transplants. Thus the use of the 4/6 matched donors improved access to transplant for patients, especially those of ethnic and racial minorities."

The researchers studied data taken from 314 patients treated at Duke between 1993 and 2007. The patients ranged in age from six months to 21 years and suffered from both malignant and non-malignant conditions.

"We found that transplantation using 4/6 matched cord blood was effective and also carried a low probability of graft versus host disease, a complication caused by the attacking immune cells from the transplanted blood or marrow that perceive the recipient as 'foreign,' in the same way a healthy body's immune system might fight off a virus," Prasad said. "The incidence of other complications was low as well, and the data suggest that using 4/6 matched cord blood could improve access for all patients."

Source: Duke University Medical Center

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