**Study Shows Stem Cells Have Potential to Help Kids’ Hearts, Too**

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## Research appearing in this month’s STEM CELLS Translational Medicine shows that stem cells may have the same potential in treating children with congenital heart diseases that can lead to heart failure.

Several studies showing the promise of stem cells for treating patients with heart failure have made headline news recently. However, all these studies dealt with adult patients only. New research appearing in this month’s STEM CELLS Translational Medicine shows that stem cells may have the same potential in treating children with congenital heart diseases that can lead to heart failure.

The study, undertaken by researchers at the Mayo Clinic in Rochester, Minn., looked at the feasibility and long-term safety of injecting autologous umbilical cord blood cells directly into the heart muscle at the pediatric stage of heart development. The study was conducted on pigs, due to their hearts’ similarity to human hearts.

The team injected the stem cells directly into the right ventricle of groups of three- and four-week old healthy piglets, and then compared the results to a control group that did not receive any cells. Over the next three months, the animals were monitored to assess cardiac performance and rhythm to determine how safe the procedure would be for humans.

“During this follow-up period, we found no significant acute or chronic cardiac injury pattern caused by the injections directly into the heart,” said lead author Timothy J. Nelson, M.D., Ph.D., of the Mayo Clinic’s Department of Medicine, “and all the animals’ hearts appeared to be normal and healthy.”

“This led us to conclude that autologous stem cells from cord blood can be safely collected and surgically delivered to children. The study also establishes the foundation for cell-based therapy for children and aims to accelerate the science toward clinical trials for helping children with congenital heart disease that could benefit from a regenerative medicine strategy,” he added.

The lead author, Susan Cantero Peral, M.D., Ph.D. commented, “This work highlights the importance and utility of umbilical cord blood as it can be applied to new applications. Rather than discarding this sample at birth, individuals with congenital heart disease may one day be able to have these cells collected and processed in a specialized way to make them available for cardiac regeneration.”

This work was funded by the Todd and Karen Wanek Family Program for Hypoplastic Left Heart Syndrome founded at the Mayo Clinic.

“These data help establish the foundation of a cell-based therapy for juvenile hearts by showing that injections of autologous cells from cord blood are safe and feasible,” said Anthony Atala, M.D., editor of STEM CELLS Translational Medicine and director of the Wake Forest Institute for Regenerative Medicine.