

World Congress on

Cardiology and Cardiac Surgery

May 16-17, 2018 | Montreal, Canada



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Could ABO-incompatible heart transplantation (HTX) in infants and newborns be a good option to decrease the death risk on waiting list? A meta-analysis

Introduction: Due to an increasing waiting time for available donor organs in pediatric heart transplantation (pHTx), ABO-incompatible HTx (HTxi) may be a satisfying option and probably an unpreventable one. There is an immunological window of tolerance during the human embryonic development which persists into the time of infancy. It has the potential of developing natural antibodies to ABO-antigens. This process plays a significant role in ABOi organ transplantation and could maintain long-term tolerance to a certain degree in the setting of HTxi.

Methods: This systematic review and meta-analysis aims at providing an overview of the reported outcome of infants and small children with end stage heart failure after undergoing a HTx. A systematic literature search for publications reporting the outcome after pHTx published between 2001 and 2017 was conducted. Studies written in English with a study size of more than 10 patients were included. The primary outcome was mortality at HTx-listing and one year after ABO-compatible HTx (HTxc) or HTxi. Exploratory data analysis of four studies was analyzed. Two types of model (fixed effect model and random effect model) were represented. Primary outcome measure was all cause mortality or delisting on the HTx list.

Results: Total mortality on HTx list in all groups was: I2=89.9%, 95% CI=64%, 99.3%. Delisted from HTx list because of recovering or worsening of clinical status before HTx: I2=72.6%, 95% CI=16.8%, 97.5%. HTxc: I2=99%, 95%CI=97.3%, 99.8. Twelve months survival after HTx was: I2=87.5%, 95% CI=56.1%, 99.1%. 86% of the patients survived 12 months after HTx in average with a 95% confidence interval of 0.84, 0.88.

Conclusion: HTxi is a good option with similar results compared to HTxc in infants. It might avoid the long waiting time and minimizes the risk of death on the waiting list. However, long-term results are yet to be determined, as well as complications and risks. Aspects such as renal function, infections, graft vasculopathy, the risk for malignancy and chronic rejection after HTxi remain to be examined closely.

Biography

Lale Hakami has her expertise in Pediatric Cardiac Surgery in infants and newborn. She is a German-Board-Certified Cardiac Surgeon with a sub specialization in Pediatric Cardiac Surgery. From 2006-2008, she was the Junior Consultant of the Congenital Heart Surgery at the University Hospital Erlangen/Germany. From 2008-2009, she was Research Fellow at the Children's Hospital Boston, USA. From 2009 to 2011, she was the Director of Pediatric Cardiac Surgery in Mainz, Germany. From 2011-2014, she was the Senior Consultant in Children Heart Center in Linz, Austria. From 2014, she has been the Senior Consultant at the University Hospital Munich, Germany and University Lecturer of Pediatric Cardiac Surgery at Ludwig Maximilians University (LMU) Munich, Germany. Her particular experience is in single ventricle physiology and heart transplantation in infants and newborn.

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