

# ISHLT 2014: thoracic transplant and ventricular assist devices in children – highlights of interest

Martin Schweiger, Michael Huebler

Department of Congenital Cardiovascular Surgery, University Children's Hospital Zurich, Zurich, Switzerland

Correspondence to: Martin Schweiger, MD. Department of Congenital Cardiovascular Surgery, University Children's Hospital, Zurich, Switzerland.

Email: martinschweig88@hotmail.com.

Submitted May 15, 2014. Accepted for publication May 20, 2014.

doi: 10.3978/j.issn.2224-4336.2014.05.01

View this article at: <http://dx.doi.org/10.3978/j.issn.2224-4336.2014.05.01>

The 2014 Scientific Sessions of the International Society for Heart and Lung Transplantation (ISHLT) were held in San Diego, California, from April 10<sup>th</sup> to 13<sup>th</sup> 2014. We would like to present a meeting summary of relevant studies and sessions dealing with children in thoracic transplantation [heart transplantation (HTx) or lung transplantation (LuTx)] and mechanical circulatory support (MCS). This year there have been 1,537 abstracts submitted to the ISHLT; 995 (65%) have been accepted. There were three pre-meeting symposia, one sunrise symposia, five concurrent sessions and one mini-oral session involving the Pediatric Council of the ISHLT.

Transition of pediatric patients to adult care was the first pre-meeting symposia (#6). It was shown that effective transition programs have the ability to decrease morbidity and mortality (Dr. Benden) associated with the transfer of care from adolescents and young adults with chronic childhood illnesses to adult care (Dr. Uzark). Psychosocial challenges (Dr. Shellmer) as well as family factors (Dr. Reardon) and different transition strategies (Dr. Anthony) were part of the session. This session was followed by the second pre-meeting symposia what it takes and what is required for 'Developing a Pediatric VAD Program' (Pre-meeting symposium #18). Dr. Peter Weardon summarized the options what kind of ventricular assist devices (VAD) are available for pediatric patients. Trying to get pediatric patients home after VAD implantation (Dr. Buchholz) and outpatient management as well as complications (Dr. Conway) were also part of this symposium. The success rate for children bridged to HTx on VAD is highly successful with 98-100% survival (Singh *et al.*, abstract #28, Zafar *et al.*, abstract #27) and it is possible to discharge them home as shown by a multi-centre trial involving nine pediatric centres (Schweiger *et al.*, abstract #29). Nevertheless Aileen Lin concluded in her talk that the long-term psychosocial impact on these children remains largely unknown and will require

further careful observation. In a concurrent session (#5) the Berlin group showed that appropriate size of Berlin Heart paracorporeal VAD pump chambers are important to avoid high rates of thromboembolic events (Miera *et al.*, abstract #31). Holzer *et al.* presented their experience with centrifugal VADs using flow rates <3 L/min (abstract #30). Further a novel portable pediatric artificial pump-lung was introduced (Liu *et al.*, abstract #32).

The final (pediatric) pre-meeting symposium highlighted infectious disease in pediatric thoracic transplant recipients (lung and heart) in a state of the arte update. Besides well known issues like CMV and EBV infections (Drs. Upton Allen, Amparo Sole), transmission of infections from donor to recipient (Dr. Burchett), reducing infections (Dr. Estabrook) and finally vaccination after transplantation (Dr. Michaels) were discussed.

Risk assessment of pediatric heart candidates was another scientific session (Concurrent Session #42). Children with congenital heart disease (CHD) listed for HTx have a higher waitlist mortality which may be related to age and decreased availability of infant donors (Richmond *et al.*, abstracted #393). Similar children listed for HTx who have potential donors declined for HLA sensitization reasons have a higher risk of death (Richmond *et al.*, abstract #394). Matching the DQ or C locus of the HLA system does not improve graft survival and should not be considered in donor selection (Butts *et al.*, abstract #396). It was demonstrated that development of de-novo donor specific anti-HLA antibodies (DSA) has a strong negative impact on development of cardiac allograft and allograft survival (Tran *et al.*, abstract #397). Protein losing enteropathy (PLE) is not associated with waitlist mortality or post-HTx morbidity or mortality (Schumacher *et al.*, abstract #398).

Management of the pediatric heart recipient (Concurrent session 17) started with Dr. Khan showing that donor heart

organs from cardiopulmonary resuscitated donors does not decrease cardiac graft survival (abstract #97). The concurrent session #35 focused on long-term outcomes in pediatric HTx. Quality of life (QoL) after HTx in childhood was investigated by different study groups; Peng *et al.* reported excellent functional status of children after HTx who have survived the first transplant year in the US (Peng *et al.*, abstract #285). Further it was shown that most of the pediatric HTx recipients graduate from high school are able to reach reasonable academic milestones, achieve social and professional independence and have similar QoL scores to those for adult HTx (Hollander *et al.*, abstract #286, Copeland *et al.*, #287). Factors predicting long-term survival differ for different pediatric age groups and include diagnosis, gender, race, height and pretransplant ventilation (Khan *et al.*, abstract #316). In infant HTx recipients, especially African Americans (DerHovannessian *et al.*, abstract #96), may benefit from induction therapy using antithymocyte globulin (Coleman *et al.*, abstract #321). Long-term complications of immunosuppression like late renal dysfunction affecting up to 11% (abstract #288) and cardiac allograft vasculopathy (CAV) (Castleberry *et al.*, abstract #99) were addressed. Sudden death among HTx recipients associated with CAV occurred in 24% (Hong *et al.*, abstract #320). On the other hand Zafar *et al.* concluded from their study that re-listing does not appear to provide a long-term survival benefit in patients suffering from CAV even if high risk patients for mortality are excluded (abstract #289). Conway *et al.* concluded from their ISHLT registry analysis a comparatively protective effect of Re-TX for CAV against death (abstract #102). The waitlist mortality for cardiac Re-transplantation has improved but remains high especially for patients over 18 years (Bock *et al.*, abstract #290). In contrast Siehr *et al.* showed relatively similar in-hospital mortality for children undergoing re-transplant or primary HTx (abstract #318). Another risk factor for mortality prior to heart transplant is underweight (Davies *et al.*, abstract #315). A risk score for adult congenital heart disease recipients was proposed by the study group of Bruchill (abstract #317) but will need validation. HLA antibodies and donor specific antibodies prior to HTx predict worse outcome (Connor *et al.*, abstract #325, Ware *et al.*, #323). C4d deposits in biopsies, which has been suggested as marker for antibody mediated rejection, is an early marker for CAV (Hiemann *et al.*, abstract #324). To avoid invasive biopsy a novel tissue Doppler index of acute rejection was presented (Hernandez *et al.*, abstract #100).

The question: 'To list or not to list: Purism or Pragmatism' by Elisabeth Blume was the final talk of the concurrent symposium 'Controversies in Listing children for thoracic

organ transplant' (#30). It considered genetic and adherence issues in children listed for thoracic organ transplantation. This session considered the impact of genetic disorders, adherence and social situation of children and parents to be accepted as transplant candidate. The debate included legal issues as well as ethical considerations.

In the sunrise symposium #14 chaired by Christian Benden and Marc Schecter the issue of infant lung transplant was addressed. In contrast to infant heart and liver transplantation the percentage of infant lung transplant is very low. In the past 25 years less than 100 infant lung transplants have been performed. The current state of infant lung transplant was presented by David Morales followed by a pro (George Mallory) and con (Samuel Goldfarb) discussion of the topic. Also the possibility of ABO incompatible infant lung transplantation was presented by Hartmut Grasemann. Analyses showed that long-term outcomes in infant recipients might be as good as for older recipients.

To summarize the most important publications from the *Journal of Heart and Lung Transplantation* Dr. Kindel presented the highlights of end-stage cardiothoracic disease in children (JHLT at the ISHLT: The year in a Capsule).

All abstracts may be found in the Abstract Issue of the *Journal of Heart and Lung Transplantation*, Volume 33, Number 4S, April 2014.

### Limitations

This report should give a very brief summary of the scientific meeting and summarize some of the abstracts dealing with pediatric thoracic transplantation and mechanical circulatory support. It does not claim to be a complete coverage of all pediatric abstracts presented at the ISHLT meeting.

### Acknowledgements

None.

### Footnote

*Conflicts of Interest:* The authors have no conflicts of interest to declare.

**Cite this article as:** Schweiger M, Huebler M. ISHLT 2014: thoracic transplant and ventricular assist devices in children—highlights of interest. *Transl Pediatr* 2014;3(3):E1-E2. doi: 10.3978/j.issn.2224-4336.2014.05.01