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Session Title : Donor Issues in Heart Transplantation

Donor considerations in pediatric heart transplantation

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Pediatric heart transplant (HT) is a last resort for children and adolescents with heart failure refractory to other medical treatment. Outcomes of all pediatric patients who undergo HT has improved significantly since the first transplantation and, the 5-and 10-year survival are approximately 80% and 65%, respectively in the current era. However, the waiting list mortality continues to remain high and an analysis of the US Scientific Registry of Transplant Recipients (SRTR) database showed that the overall 1-year mortality for all waiting list patients was 17%. From the Korean data among 3 referral centers from 2000 to 2020, 26% of patients died during waiting for HT. The number of potential pediatric HT recipients continues to exceed the number of donors and consequently the waiting list mortality remains significant. Despite this, about 40% of all donated organs are not used and are discarded. The non-utilization of donors has many contributing factors as followings: the absence of any accepted standards or guidelines for pediatric donor heart assessment and subsequent acceptance; the influence of physician and surgeon preferences; disparate regulatory requirements; variability in program quality indicators and expected benchmarks for success; and regional differences in prioritization schemes and healthcare system economics. Additional factors include waiting list times, number of heart donors, listing criteria, recipient acuity and the availability of bridging devices. Infants and children often have longer waiting list time compared to older children given limited donor availability for their size and age, even when listed as highest priority for an organ. Among these factors, donor characteristics are used to determine acceptance of organs. Historically, donor characteristics such as decreased ejection fraction, presence of cardiopulmonary resuscitation (CPR), prolonged CPR, predicted prolonged ischemic time, mechanism of death were thought to signify 'marginal donors'. Especially for donor age issue, a Donor-Recipient age difference of >5 years was associated with decreased post-transplant survival, and increased coronary allograft vasculopathy and donor age greater than 40-year-old is not recommended for pediatric and adolescent recipients who are waiting for HT in general. The donor-recipient body weight (DRWB) ratio has been the most common method to determine acceptable donor weights for recipients. However, this ratio does not incorporate actual cardiac volumes, which has shown to limit possible donors. Though general recommendation of DRWB ratio is less than 2, many centers are doing HT in the cases of DRWB ratio greater

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than 2.5 because of donor heart shortage in the real practice. Donor evaluation and matching with the recipient for HT is a complex multi-step process and requires consideration of many recipient and donor factors. Given the growing waiting list time, donor shortage is a cause for concern and the HT society is increasingly focused on methods to improve donor utilization and to expand some of the criteria for donor selection.