Outcome of Patients supported with HeartMate 3 after Extra-corporeal Life Support. On behalf of durable MCS after ECLS Study Group

Objectives: Durable mechanical circulatory support system (MCS) after (extra-corporeal Life Support (ECLS) registry is a multicenter registry of patients who were bridged from ECLS to durable MCS. The registry include patients supported with different types of durable MCS after 2010. While the outcome after HeartMate 3 (HM3) implantation is improving, we aimed in this study to investigate the outcome of patients supported with HeartMate 3 after ECLS.

Methods: Data of patients undergoing HM 3 implantation after CE approval from 01.2016 thru 04.2022 at 13 heart centers are collected and evaluated. Inclusion criteria were patients with ECLS support prior to HM3 implantation. The primary outcome was 1 year survival.

Results: A total of 698 patients were bridged to durable MCS after ECLS in the study period. A total of 133 patients were supported with HM3. The other types of pumps included HeartWare HVAD (78%), HeartMate II (15%) and other pumps (7%). The average age of the HM3 patients was 57 yo [IQR: 50-64]. The majority of the patients (84%) were male and 36% of the patients had dilative cardiomyopathy. 34% of the patients had history of cardiopulmonary resuscitation prior to the ECLS implantation. The median ECLS support duration prior to durable device implantation was 5 days [IQR 3 - 9]. Up to 23% of patients had history of previous cardiac operations. Less invasive implantation technique was used in 14% of the patients. ECLS cannulation was central in 13 % and peripheral in 87 % of the patients. The pump was implanted on ECLS (without cardiopulmonary bypass) in 23% of the patients. Postoperative complications included right heart failure requiring right VAD in 45% of patients and bleeding requiring resternotomy in 27%. Device explantation for recovery was performed in 3% of the patients. Heart transplantation was performed in 15% of the patients. The 30 day, 1 year and 2 year survival was 87%, 74% and 69% respectively. The 30 day, 1 year and 2 year survival after other implanting other type of pumps was 77%, 53% and 45% respectively.

Conclusions: Considering this extremely sick patient population on ECLS, the survival of patients to HeartMate 3 is excellent and higher than the survival when ECLS was bridged to other types of durable MCS. Nevertheless, a higher rate of postoperative bleeding and right ventricular failure complication was observed compared with conventional durable MCS implantation cases.
Montefiore Medical Center, Bronx, NY, (19) University Heart & Vascular Center Hamburg, Hamburg, Hamburg, (20) Herz und Diabeteszentrum NRW, Bad Oeynhausen, Germany