Extracorporeal Membrane Oxygenation Support in Post-Cardiotomy Shock

VALORIZATION

This thesis highlights the incidence, results, complication and innovative management of patients submitted to ECMO because of PC cardiogenic shock. This thesis provides several insights about the efficacy of ECMO in several settings of cardiac surgery or related interventions. Indeed, the favorable results obtained in complex settings, like HTx and general cardiac surgery confirm the efficacy of such a temporary support in case of refractory and life-threatening PC conditions, like graft rejection or cardiogenic shock due to variable reasons following cardiac surgery procedures. We could also demonstrate the impact of modified and more careful management (particularly in terms of anticoagulation and perioperative bleeding control) on the in-hospital results, with a positive trend reflecting on satisfactory ultimate outcome of treated patients.

The importance of the availability of the ECMO support, also as a back-up, has been clearly shown by our literature search in the setting of transcatheter valve implantation, particularly in the rescue and support of subjects experiencing severe complications, but also the impact of such a support in a prophylactic way, that is protecting hemodynamically the patients during high-risk procedure. The temporary support with ECMO enabled the performance of difficult and life-threatening procedure while guaranteeing cardio-circulatory and respiratory support during procedures which would have witness almost certainly complication or highly complex cardiocirculatory dysfunction and failure during or just after such procedures.

Further investigations about ECMO access, either in PC or non-PC settings, have showed that the access to implement such a support may also influence the patient outcome, particularly with regards to the complication types and rate with the peripheral approach demonstrated as less related to bleeding complications, although, the overall survival was not affected comparing the central or peripheral access.

The information available for PC-ECMO has been always rather poor and limited to single-centre experiences. A thorough review, with the provision on detailed information about prevalence, in relation to the overall cardiac surgery procedural number, conditions, patient profiles, support

modalities, complications and outcome at short or long-term, have been also realized for adult and pediatric populations, and certainly precious for investigators and people involved in such settings.

Finally, the presentation of an innovative management in the ECMO scenario, particularly helpful in patients experiencing either cardiac arrest or RV dysfunction before or after surgery, has been presented by means of a preliminary series of patients. This experience, as a multicenter investigation, showed the promising advantages of cannulating the pulmonary artery, also percutaneously. Such a technique will certainly be increasingly adopted in the ECMO setting, and particularly in PC subjects, allowing the management of complex situation that in the past were characterized by aggressive and often unsuccessful approaches. This new procedure and ECMO management will expand the options for complex patients, allowing the attending personnel to include minimally invasive and versatile configuration for PC-ECMO temporary support, thereby representing a major improvement in these patients.