

Chapter 5

COMPLICATIONS RELATED TO ECMO USE

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INTRODUCTION

Extracorporeal membrane oxygenation (ECMO) is an extracorporeal life support system that can temporarily provide oxygenated blood to the body in patients with acute or chronic heart deficiency and pulmonary failure. ECMO is in use since 1971, but in recent years its use increased with technological improvements (Hill, O'Brien & Murray, 1972 and Lee, Yu & Lee, 2015).

ECMO is consisting of a pump circuit and a membrane oxygenator. It can be used in two configurations, as veno-arterial (VA) and veno-venous (VV). VV-ECMO is the main way for pulmonary recovery in patients with reversible acute respiratory failure, acute respiratory distress syndrome, failed lung transplant and pulmonary contusion. VA-ECMO is the more used configuration for cardiovascular surgery practices. It is used as bridge to recovery of heart and lungs, bridge to permanent ventricular assist device implantation, or bridge to heart transplantation for patients with heart failure. After cardiac surgery, ECMO is used to wean cardiopulmonary bypass and to provide heart recovery (Beckmann, Benk & Beyersdorf, 2011) (Table 1, 2). VA-ECMO can be implanted in peripheral or central way. In peripheral VA-ECMO, venous cannula is placed in right atrium via femoral vein via percutaneous technique. Arterial cannula is placed in femoral or axillary artery. Femoral cannulation is mostly preferred via percutaneous technique. But, axillary cannulation of arterial circuit is usually performed after a graft anastomosis to axillary artery and than cannulation of arterial cannula into the graft. In central VA-ECMO, femoral percutaneously venous cannulation, or rarely direct right atrial cannulation is used and arterial system return direct to ascending aorta or via graft anastomosis. All of these cannulation techniques bring out many complication risk (ELSO, 2013).

In some circumstances, only VA-ECMO use may not be enough to wean heart form cardiopulmonary bypass or for recovery of the heart from postcardiotomy failure. Intraaortic balloon pump can be used to decrease afterload and to im-

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