Case Report; Successful LVRS under VV ECMO in Severe Heterogenous Emphysema Patient

전북대학교 의과대학 내과학교실

김우종, 박승용

Abstract: Emphysema is a disease characterized by lung hyperinflation and symptoms of breathlessness associated with significant morbidity and mortality. For a narrow subset of patients, surgical treatment with lung volume reduction surgery has proven to be an effective strategy to reduce dyspnea and improve quality of life; however, its application is limited due to invasiveness and morbidity. Extracorporeal membrane oxygenation (ECMO), also known as extracorporeal life support (ECLS), is an extracorporeal technique of providing prolonged cardiac and respiratory support to persons whose heart and lungs are unable to provide an adequate amount of gas exchange or perfusion to sustain life. Its use has made complicated thoracic surgical procedures feasible by providing complete pulmonary isolation even in patients with poor respiratory reserve. We present a case for a 46 years old patient with severe heterogeneous emphysema who had a successful LVRS under Venoveous extracorporeal membrane oxygenation (VV-ECMO). Case A 46-year old female, without history of smoking, presented with difficulty breathing. Initial chest radiography showed large bullae on right middle lobe. When followed up with an HRCT, the patient showed severe heterogeneous emphysema. Spirometry demonstrated obstructive pattern of FEV1 1.16L FEV1/FVC 56. Her blood test showed an increase of 163mg/dL alpha-1 antitrypsin. The patient was prescribed long acting beta-agonist and long acting muscarinic agonist inhaler. For 3 years, the follow-up spirometry showed aggravated airflow obstruction. This indicated that LVRS was needed; however, the risk of tension pneumothorax was high due to exceptionally large sized bullae, and the decreased lung function made it hard to sustain oxygenation with one-lung ventilation. To solve this problem, we decided to perform right middle lobectomy on the patient while under ECMO. The results were promising with her post-operative spirometry showed improved airflow obstruction and the symptoms were relieved. Discussion heterogenous emphysema where decreased pulmonary function raises operative risks, ECMO is a promising new approach to lower such risks during OP management