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Congenital diaphragmatic hernia

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Congenital diaphragmatic hernia (CDH) remains a common defect in infants and occurs worldwide at a rate of 0.8 – 4.5 per 10,000 live births. It is associated with high mortality and morbidity. Veno-arterial (VA) support remains common in neonates with CDH, although venovenous support has also been used.[1] Criteria for extracorporeal membrane oxygenation (ECMO) in CDH patients remain an inexact science. Studies have evaluated the role of achievable gas exchange (both carbon dioxide and oxygen), fetal lung-to-head ratio, lung volume estimates, and other factors in predicting outcomes, but none have proven to be highly accurate.[2] Currently, observed/expected lung-to-head ratio of <1 and liver position up in chest are associated with poor outcomes in some reports. Fetal therapies to encourage lung growth with tracheal occlusion are also occurring in cases of predicted severe CDH. Following birth, use of "gentle" ventilation is recommended to limit mechanical ventilator-induced lung injury. Use of inhaled nitric oxide to alleviate pulmonary hypertension may be helpful in some patients as well. High-frequency oscillatory ventilation is often provided. If the patient remains unstable or has severe hypercarbia or hypoxia, ECMO is considered. Despite many years of experience with CDH and ECMO, it should be noted that survival remains only about 50% and has not markedly improved over time.[3] There is little consensus on when to repair the CDH, with some clinicians performing surgery while on ECMO and others preferring that the patient be weaned off ECMO successfully prior to surgical hernia repair.[4] Survivors often have residual problems such as frequent respiratory illnesses that bring them into the hospital even after they get successfully discharged. Coexistent cardiac or genetic abnormalities have also been associated with poor outcome in patients with CDH, with or without ECMO support.[5] CDH care is also expensive, especially in patients who require ECMO or prolonged hospital stays. It is hoped that

future research will result in improvements in prevention and treatment for these fragile infants. Until that time, ECMO will continue to hold a place in support of these patients.

Keywords: ECMO, ECLS, respiratory failure, neonates, CDH, diaphragmatic hernia

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