Editorial

Keep an Eye on Pre Operative Predictors of Postoperative Mortality in Congenital Diaphragmatic Hernia

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Congenital diaphragmatic hernia (CDH) is a common congenital malformation in neonatal intensive care unit (NICU) admitted patients. Its management is always difficult and tricky. Despite best available modalities and expertise, mortality is high (36% based on the CDH registry). The estimated incidence of congenital diaphragmatic hernia is 1 in 2000 - 5000 live births. Outcome is dependent on multiple factors. Many factors have been linked with poor outcome including low birth weight, poor 5-minute Apgar score, premature delivery, an air leak, other congenital malformations or chromosomal defects.

Even if there is no associated congenital malformation, pulmonary hypoplasia and persistent pulmonary hypertension (PPHN) may result into high mortality if not controlled before surgery. Many physiological, biochemical and ventilation parameters can determine the post-operative fate in CDH. These parameters are arterial pH, preductal and postductal PO_2, ventilatory index (VI), Oxygenation Index (OI) and many other modifications of all these. Age at the time of admission, duration of difficulty in respiration and presence of PPHN are relevant risk factors which may lead to severe disease in CDH patients. Literature review shows that age at the time of admission is very critical factor which denotes overall mortality in CDH. Cardiac malformations have been found by many investigators as risk factors for poor outcomes in CDH patients. It has been seen that possibility of death after surgery increased to 18.54 fold if there was associated congenital heart disease. Although cardiac anomalies are the commonest anomalies associated with CDH but their etiology is obscure. Most of the CDH-associated congenital cardiac anomalies contribute to the poor hemodynamic status, which is already badly compromised in babies with CDH. 1-minute and 5-minute Apgar scores are very important to predict outcome after CDH repair. Apgar scores have strong relationship with pulmonary function, cardiovascular response, and outcome after resuscitation in babies with CDH. Asphyxia depends on Apgar score. Low Apgar score is directly proportional to severity of asphyxia which may lead to high postoperative mortality.

Literature review shows that Oxygen index has gained vast popularity as prognostic criterion for preoperative stabilization and postoperative outcome. Inability to achieve OI < 10 within 24 hours of standardized invasive treatment involving HFV and NO indicates high risk of unfavorable outcome regardless whether patients were operated or not. Oxygen index is calculated based on mean airway pressure, FIO_2, and partial pressure of oxygen. OI will be less if MAP and FIO_2 will be low because when lung compliance is good, pulmonary hypertension is less and hypoxia is decreased, values of MAP and FIO_2 will decrease and partial pressure of oxygen will increase and in result OI will decrease and vice versa. So, OI has an indirect relationship with function or dysfunction of hypoplastic lungs and gives a clue when to operate these patients with minimum preoperative ventilator dependency and early postoperative weaning. So, age at admission, Apgar score, cardiac malformations and preoperative OI are good predictors of post-operative outcome in CDH.