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CLINICAL BOTTOM LINE

Commentary on "Expiratory Flow Increase Technique and Acid Esophageal Exposure in Infants Born Preterm With Bronchopulmonary Dysplasia"

"How should I apply this information?"

- Neonates in the neonatal intensive care unit (NICU) with bronchopulmonary dysplasia (BPD) need respiratory care to minimize pulmonary complications. The authors looked at one aspect of this care: Will the expiratory flow increase technique (EFIT) cause gastroesophageal reflux (GER) in infants born preterm with BPD? The answer was no; the EFIT did not cause an increase in GER 2 or 3 hours after feeding.
- However, clinicians should not assume that the EFIT was proven to be an effective or safe airway clearance technique for neonates. They did not examine cardiopulmonary changes such as short-term effects on vital signs, or long-term effects on subsequent pulmonary complications.
- Before implementing the EFIT for neonates with BPD in the United States, further research is needed to determine:
 - Pulmonary outcomes and safety of the EFIT procedure
 - Effect on cerebral blood flow in neonates less than 34 weeks of gestation by ultrasound monitoring of middle cerebral artery perfusion before, during, and after the EFIT procedure
 - Comparison of outcomes from the EFIT with other approaches in neonatal care such as medical management of BPD and individualized developmental care
 - Documentation of physiological and behavioral baseline and changes during and after the EFIT

"What should I be mindful about in applying this information?"

- Because few researchers have examined the efficacy or complications of chest physical therapy (CPT) with neonates, it was not surprising that limited numbers of references were cited. However, more than half of the 30 references were published in 1999 or earlier. With the rapidly changing NICU environment, the findings from these older articles likely have limited relevance to current practice.

- Two systematic reviews of evidence by Cochrane Review panels concluded insufficient evidence exists for using chest physiotherapy with neonates.^{1,2} No reports were found on the efficacy or safety of the EFIT for neonates.
- In contrast, individualized developmental care for infants born preterm, rather than traditional CPT, has been supported by evidence gathered in randomized trials for decreasing the prevalence of BPD, days of mechanical ventilation, and length of hospital stay.³⁻⁵
- Neonatal clinicians should keep in mind the following potential adverse effects of the EFIT:
 - Rib fractures: osteopenia is increased in infants with BPD and related to poor nutrition
 - Hemodynamic complications: Because of pressure-passive circulation and incompletely developed autoregulation of cerebral blood flow in infants less than 34 weeks of gestation, changes in blood pressure with medical and caregiving procedures may alter blood flow in the cerebral vasculature placing neonates at risk for cerebral hemorrhage or ischemia.^{6,7}
 - Behavioral and physiological instability
 - Pain
 - For all neonatal physical therapy procedures, the infant's behavioral and physiological responses before, during, and after the procedure must be recorded, including the assessment and monitoring of pain. In the video linked with the article, the infant demonstrated behavioral signs of stress and likely discomfort (legs abruptly recoiling into flexion, tremor in arms). Methods for recognizing behavioral stress were not described, and body-positioning strategies (containment rolls or nesting) to support the infant's extremities during the EFIT were not evident.

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