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Ultrasound for diaphragmatic dysfunction in postoperative cardiac children

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Introduction: Diaphragmatic Dysfunction is a common cause of failed extubation and prolonged mechanical ventilation after pediatric cardiac surgery in up to 14%. This study aims to evaluate the role of critical care bedside Ultrasound performed by intensivist to diagnose diaphragmatic dysfunction and the need for plication after pediatric cardiac surgery. Methods: Retrospective cohort study on prospectively collected data for post-operative children admitted to PCICU during 2015. Diaphragmatic dysfunction was suspected based on difficulties in weaning from positive pressure ventilation or Chest X-Ray findings. Ultrasound studies were performed by PCICU intensivist and confirmed by qualified radiologist.

Results: Out of 344 post-operative patients, 32 needed diaphragm ultrasound for suspected dysfunction. Ultrasound confirmed diaphragmatic dysfunction in 17/32 (53%) patients with an average age and weight of (10.8±3.8) months and (6±1) Kg respectively. The incidence rate of diaphragmatic dysfunction was (4.9%) in relation to the whole population. Diaphragmatic plication was needed in 9/17 cases (53%), with rate of 2.6% in post-operative cardiac children. Mean plication day was (15.1±1.3) after surgery. All patients who underwent plication were under 4 months of age. Post plication they were discharged with mean Pediatric CICU and hospital stay of (19±3.5) and (42±8) days respectively.

Conclusions: Critical care ultrasound assessment of diaphragmatic movement is a useful and practical bedside tool that can be performed by a trained pediatric (CICU) intensivist. It may help in early detection and management of diaphragmatic dysfunction post pediatric cardiac surgery which may have potential positive effect on morbidity and outcome.

Biography

Deanna Mulvihill has her expertise in evaluation and passion in improving the health and wellbeing. Her open and contextual evaluation model based on responsive constructivists creates new pathways for improving healthcare. She has built this model after years of experience in research, evaluation, teaching and administration both in hospital and education institutions. The foundation is based on fourth generation evaluation (Guba & Lincoln, 1989) which is a methodology that utilizes the previous generations of evaluation: measurement, description and judgment. It allows for value-pluralism. This approach is responsive to all stakeholders and has a different way of focusing.

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