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Case report
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Unexpected Pneumothorax Suspected by Performing Non-Lung Point-of-Care Ultrasound

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Case Report

Currently lung point-of-care ultrasound (POCUS) represents one of the most powerful tools when managing critically ill children. Its use allows to safe time avoiding deleterious effects from other diagnostic techniques such as ionizing radiation, which is specially important in children. POCUS is based on a multi-scan syndromic approach of medical problems more than scanning some specific anatomical areas. In other words, POCUS is able to stablish a diagnosis by scanning different organs views. We present two cases of unidentified pneumothorax suspected by using non-lung point-of-care ultrasound, confirmed posteriorly by lung ultrasound. In all cases high frequency linear transducers (5-10Hz) were used for evaluating superficial structures (neck, pleura) and the lung was scanned in a longitudinal plane, placing the probe perpendicular to the chest wall.

Case 1

Girl aging 6 years, suffering from neuromuscular disorder. She was admitted to PICU because of hypotensive and hypoxemic event, being a sepsis the main diagnostic suspicion. She was placed on mechanical ventilation and inotropic support was started. Her physical examination showed a erythematous and painless neck mass, with no crepitation by palpation. Cardiopulmonary auscultation shared bilateral roncus with simetrical ventilation in all the lung fields. Conventional chest radiography showed not significative information, being extremely difficult its interpretation due to the severe thoracic malformation. An ultrasound neck scan revealed gas artifacts (A lines), thus a\ suspicion of pneumothorax was done (Figure 1). After reviewing the chest radiography, a right pneumothorax was confirmed [1-2].

Case 2

Male aging 3 years admitted to PICU for correcting a Fallot Tetralogy. In the first postoperative day, the patient was hemodynamic and respiratory stable. To perform a routine comprehensive echocardiography was not possible because the lack of an adequate acustic window. As there were any logical cause which justify the bad ultrasound window, a bedside lung ultrasound was immediately set in order to rule out a pneumothorax. Lung sliding was abolished in the upper left chest quadrant. Finally, a lung point (pneumothorax) was detected in the third intercostal space of the left lung.

Comments

From our view, both cases are representative about the usefulness of POCUS. First, the scans were successfully done bedside, meaning a time saving tool. It was not necessary to carry the patient out of the PICU which represents another important POCUS advantage taking into account the risk which all medical transport imply in critically patients. However, the most important learning is that multiple ultrasound scans helps to set a correct diagnosis, in spite the organ with the pathological situation was not firstly scanned. In the same way that a fully physical examination is absolutely mandatory, POCUS needs to integrate all ultrasound views information when managing critically ill pediatric patients. Pneumothorax is not difficult to rule out by performing lung ultrasound but in critical scenario the final diagnosis is frequently held by a high clinical suspicion. When we managed both our patients, POCUS was performed for other clinical purposes such as to determine the origin of the shock and the volume status in one case, and just something as routine monitoring as it happened in the second one. However, the analysis of the multi-views POCUS led to the unexpected diagnosis.

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