Rethinking chest imaging in childhood pneumonia: Ultrasound as the new norm

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Dear editor, Pneumonia is a leading cause of morbidity and mortality among children. Clinical diagnosis can be challenging due to its variable presentation in paediatric patients.[1] Traditionally, chest X-rays have been used as the primary imaging tool; however, with growing concerns over radiation exposure ultrasound is increasingly being considered as a safer alternative, offering comparable and potentially superior efficacy in diagnosing childhood pneumonia.[1,2]

A meta-analysis published in 2023 provided corroborating evidence. It pooled data from 26 studies and showed that Thoracic ultrasound had a pooled sensitivity and specificity of 0.95 and 0.94, respectively, for diagnosing paediatric pneumonia.[1] Another meta-analysis comparing thoracic ultrasound and chest X-rays found supporting evidence favouring lung ultrasound. It highlighted the significantly higher sensitivity of lung ultrasound for detecting childhood pneumonia (0.95 vs 0.92).[3]

The paediatric population, when exposed to even low-dose ionizing radiation, are at an increased risk of developing cancers, which can prove deadly. This can be circumvented by using ultrasound, which does not involve ionizing radiation.[4] Furthermore, this allows the physician to perform multiple scans to assess the progression of the disease without the concern of increased exposure to ionizing radiation. Ultrasound is also more time-efficient than X-ray, enabling quicker image acquisition and interpretation.[5] This attribute is of paramount importance when imaging children in distress, who may be unable to remain still and could distort an X-ray image. Additionally, using an ultrasound can help a clinician make more timely interventions as it produces quicker imaging findings as compared to an X-ray.[5]

However, it is important to acknowledge the limitations of lung ultrasound, including its operator-dependency and poor visualisation of the mediastinum. Therefore, chest X-ray remains a necessary tool in certain complex cases.

In light of these findings, the authors advocate for revising the current protocols being followed when suspecting pneumonia in a child, promoting ultrasound as a first-line imaging tool where appropriate. The authors call upon hospitals to equip paediatric departments with ultrasound imaging devices and to arrange structured training and accreditation programmes.

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