

Diagnostic Value of Lung Ultrasonography in Children with COVID-19

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Abstract

Background: Lung ultrasound (LUS) has been successfully used in the diagnosis of different pulmonary diseases. Present study design to determine the diagnostic value of LUS in the evaluation of children with COVID-19, and to compare chest X-ray and LUS results with tomography (CT). Method and objectives: In this prospective multi-center study, 40 children with confirmed COVID-19 were included. LUS was performed to all patients at admission. The chest X-ray and CT were performed according to the decision of the primary physicians. LUS results were compared with chest X-ray and CT. The sensitivity and specificity and diagnostic performance was determined. Results: Of the 40 children median (range) was 10.5 (0.4-17.8) years. Chest X-ray and LUS were performed on all and chest CT was performed on 28 (70%) patients at the time of diagnosis. Sixteen (40%) patients had no apparent chest CT abnormalities suggestive of COVID-19, whereas 12 (30%) had abnormalities. LUS confirmed the diagnosis of pulmonary involvement in 10 out of 12 patients with positive CT findings. LUS demonstrated normal lung patterns among 15 patients out of 16 who had normal CT features. The sensitivity identified by the chest X-ray and LUS tests was compared and statistically significantly different ($p=0.016$). Chest X-ray displayed false-negative results for pulmonary involvement in 75% whereas for LUS it was 16.7%. Conclusions: LUS might be a useful tool in the diagnostic steps of children with COVID-19. A reduction in chest CT assessments may be possible when LUS is used in the initial diagnostic steps for these children.

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