

State-of-the-art pediatric chest imaging

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Pediatric chest imaging is both unique and challenging [1, 2]. One of its unique features is that air is abundant in the lungs and airways. This significantly limits intrathoracic US and poses challenges to MRI, whereas it provides excellent tissue contrast for chest CT. Another unique feature of pediatric chest imaging is respiratory motion causing motion artifacts in young or uncooperative children. It is difficult to control and standardize the degree of lung inflation for chest imaging even in conscious adults. In addition, it should be recognized that ventilation, provided by the lungs and airways, is intimately related to perfusion, provided by the heart and thoracic vessels, for gas exchange, the essential function of the lung. Anatomy and function of the lungs and airways on pediatric chest imaging are also affected by not only the adjacent structures, such as the cardiomediastinal structures, the thoracic cage and the diaphragm, but also cardiac pulsation.

As pediatric radiologists we need to develop our own strategies for pediatric chest imaging because the pediatric chest differs from the adult chest in terms of anatomy, function and disease spectrum. Furthermore, most imaging

systems and analysis tools were originally developed for adults, not for children. This issue of Pediatric Radiology presents a minisymposium aimed at reviewing state-of-the-art pediatric chest imaging techniques focusing on CT and MRI and their clinical applications. In particular, the quantitative and functional assessment of the pediatric chest described in this minisymposium has great potential to advance our clinical practice. As guest editor of this minisymposium, I hope readers find it helpful and I would like to express my sincere appreciation to the contributors.

References

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