

Comment on “Thoracic Magnetic Resonance Imaging Applications in Children”

Marco Maglione , Melissa Borrelli , Francesca Santamaria 



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Department of Translational Medical Sciences, Section of Pediatrics, Federico II University, Naples, Italy.

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Correspondence to: Marco Maglione
E-mail: marcomaglione84@gmail.com

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Dear Editor,

We deeply commend Adem Karaman on his effort in summarizing the current applications of chest magnetic resonance imaging (MRI) in children in a recent issue of *The Eurasian Journal of Medicine* (February 2020) [1]. This is an area that we actively pursued in noncystic fibrosis chronic respiratory disorders, showing that such a technique represents a reliable radiation-free alternative to computed tomography (CT) in assessing the extent and severity of lung abnormalities in conditions including primary ciliary dyskinesia, immune defects, and recurrent pneumonia [2]. In these patients, MRI allowed good to excellent visualization of bronchiectasis, consolidations, mucus plugging, and peribronchial wall thickening. Assessment of MRI performance outcomes in comparison with CT showed high sensitivity and specificity for the detection of most lung abnormalities. However, because of its low proton density, air is poorly visualized at MRI, and therefore, worse performance outcomes were detected for bullae and emphysema, owing to the increased air content typical of these lesions [3].

An additional, particularly interesting application of chest MRI is the evaluation of structural lung disease in patients with ataxia-telangiectasia, a rare genetic disease characterized by heightened sensitivity to ionizing radiations, whose lung involvement cannot be assessed by CT, given the increased risk of developing malignancies [4].

For all these chronic conditions, the need of periodic structural lung disease assessment magnifies the main added value of MRI over CT, namely, the absence of radiation exposure. Cumulative radiation doses from medical imaging may reach high values in chronic patients [5] and may lead clinicians to avoiding frequent CT scans, thus possibly missing subclinical progression of lung abnormalities. In this setting, the availability of a radiation-free reliable tool may allow systematic structural assessments providing a better care with no additional harms for the patients.

Nevertheless, chest MRI application is still limited by several drawbacks. Among these, lower spatial resolution, limited access to the technology, long acquisition times, and high costs are easily identifiable. However, technical progress will hopefully lead to lower costs, shorter examination times, and higher image resolution. What is still probably lacking and appears more difficult to achieve is the awareness of the potential of chest MRI, which makes both clinicians and radiologists generally skeptical about its application in pediatric respiratory care. This entails that so far, very few health providers have developed skills for chest MRI scan interpretation, thus strongly limiting the application of this technique in routine management of pediatric chronic lung disease.

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