

DOI: 10.5152/TurkThoracJ.2019.55

[Abstract:0772] MS-079 [Accepted: Oral Presentation] [Pediatric Lung Diseases]

The Evaluation of Lung Involvement in Patients with Cystic Fibrosis by Using Mediastinal Magnetic Resonance Imaging

Gökçen Dilşa Tuğcu¹, Sanem Eryılmaz Polat², Mina Garibzadeh Hızal², Beste Karakaya Özsezen², Altan Güneş³, Güzin Cinel¹¹Clinic of Pediatric Pulmonology, Ankara Children's Hematology and Oncology Training Hospital, Ankara, Turkey²Department of Pediatric Pulmonology, Hacettepe University İhsan Doğramacı Children's Hospital, Ankara, Turkey³Clinic of Pediatric Radiology, Ankara Children's Hematology and Oncology Training Hospital, Ankara, Turkey

Objectives: Variable imaging methods especially computed tomography (CT), are used to detect pulmonary involvement. CT is the gold standard imaging method to show lung findings in patients with CF. In recent years, magnetic resonance imaging (MRI) has been used to show lung findings in patients with CF. Different scoring methods (Helbich and Eichinger) were developed to evaluate the correlation between CT and MRI findings. MRI has been reported to be as successful as CT in detecting abnormal findings such as bronchiectasis and mucus plugs. The aim of this study was to compare lung findings in patients who underwent CT and MRI at the time of follow-up with CF in our clinic and to evaluate the correlation with clinical findings.

Methods: Between August 2018 and February 2019, 14 patients [male/female=10/4, median age 6.7 years, age range (4-20 years)] who were followed-up with the diagnosis of CF. These patients who had symptoms and radiological findings underwent CT and MRI on the same day. CT was taken with appropriate imaging protocol for patient age and weight without using intravenous contrast agent. MRI imaging was performed using two-sequence (coronal and axial T2-weighted, average 7 minutes), without intravenous contrast agent, images were obtained to be correlated with respiration. MRI was performed in young children with superficial sedation (chlorhydrate) or without sedation while they were sleeping. CT and MRI findings were evaluated with Helbich and Eichinger scores. The results were analyzed by Wilcoxon test.

Results: Five patients had chronic colonization with *Paeruginosa* and four had Phe508del homozygote mutation. CT findings were bronchiectasis and peribronchial thickening in 10/14, budding tree appearance in 8/14, mosaic attenuation in 7/14, mucus plug in 4/14 and linear-subsegmental atelectasis in 4/14 patients. According to Helbich scoring, the mean score in CT was 6.6 (score range 1-17), while MRI was 4.7 (score range 0-15). The mean score in the MRI was 3 (score range 0-16) according to the Eichinger score. There was a statistically significant difference between CT and MRI findings according to Helbich scoring ($p=0.003$). CT was superior to MRI in demonstrating mosaic attenuation. There was no significant difference between CT and MRI in detecting other findings. 4 patients who had Phe508del homozygote mutation chronic colonised with *p.aeruginosa* and had higher CT and MRI scores than rest of them ($p=0.002$).

Conclusion: Pulmonary involvement with CT can show in detail; however, other findings were similar with CT, except for mosaic attenuation in MRI. Helbich scoring, in which emphysema, bullae and mosaic attenuation are used as scoring criteria, may be insufficient for MRI. Eichinger scoring which uses less scoring criteria can be preferred for MRI. MRI may become the gold standard to demonstrate lung findings.

Keywords: Cystic fibrosis, computed tomography, magnetic resonance imaging