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Pulmonary MRI in Follow up of Children with Bronchopulmonary Dysplasia

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Objectives: Bronchopulmonary dysplasia (BPD) is a serious neonatal pulmonary condition associated with premature birth. Data concerning following of BPD patients beyond neonatal periods are limited. The evaluation of patients with advanced radiologic methods at early ages is important in terms of determining the severity of the disease and follow-up. Thorax CT scans are widely used for this purpose. However, there are concerns regarding ionizing radiation exposure. As a non-ionizing modality, magnetic resonance imaging (MRI) is particularly appropriate for the repeated radiological assessment of pulmonary pathologies associated with BPD.

Methods: In our study, lung MRI was performed at a time when BDP patients lines around one year of age. MRI conducted when there was no suspicion of pulmonary infection. MRI findings were evaluated by a pediatric radiologist. Pulmonary structural finding and their distribution were determined (fibrotic bands, distrotrion). The findings were compared with the severity, clinical and demographic characteristics of BPD patients. In addition, we try to determine the advantages of MRI on chest radiography. A total of 7 patients were included in the study. Coronal and axial T2-weighted MRI imaging was performed (TR/TE: 4500-5300/90-106 msec). The imaging was performed during the patient's sleep time without giving sedation or by giving chlorhydrate. The average imaging time is 6-7 minutes

Results: A total of 7 patients were included in the study. Three patients were female and 4 were male. According to BPD classification two patients was mild BPD, one patient was moderate BPD, and 4 patients were severe BPD. Mean gestational week was 27. Mean age at the time of enrolment was 13 months. Four had mechanical ventilation support in the neonatal period. Two of the patients still on the need for oxygen support. In mild BPD patients, fibrotic bands were seen in <3 segment and there was no parenchymal distrotrion. As the severity of BPD and complications increase fibrotic bands density and number of the segments involved increase. Bronchovascular distortion was observed in moderate and severe BPD patients. Also MRI helpful in the differentiation of chronic parenchymal change from infection and/or lymphadenopathy seen in chest X-ray

Conclusion: The present study demonstrates that MRI can be used in the follow-up of patients with BPD. MRI can demonstrate structural abnormalities of BPD, describe disease severity. Help the clinicians in differentiating of the lymphadenopathy, infection, and parenchymal changes in children with lung injury. It can be withdrawn in a short time without sedation.

Keywords: Bronchopulmonary dysplasia, MRI, pediatric