Body: Background; Recent studies have reported the effectiveness of magnetic resonance imaging (MRI) for diagnosing pulmonary nodules. However, its utility for cases of diffuse lung injury remains unknown.

Purpose; We evaluated the effectiveness of MRI for detecting diffuse lung injury in experimental animals.

Methods; Studies were performed with 18 healthy male rats, which were divided into 3 groups; no experimental intervention (control group, n=6), pulmonary edema induced by ligation of the inferior vena cava and intravenous injection of 20% body-weight Ringer’s solution after anaesthesia (ED group, n=6), and interstitial pneumonitis induced by bleomycin (IP group, n=6). After euthanasia, the lungs were inflated by use of a tracheotomy to a pressure of 20 cm H₂O then excised en bloc. Each specimen was placed in a plastic tube then examined by MRI, with T1 and T2 values acquired by analyzing the obtained images.

Results; There was clear visualization provided by the MR images of the lung vascular system, bronchi, and parenchyma in all groups. In the ED and IP groups, increases in diffuse signals from the lung parenchyma were noted, while no such findings were observed in the control group. T1 and T2 values in the ED and IP groups were significantly increased as compared with the control (P<0.05). In the IP group, T1 values tended to increase, while T2 values tended to decrease as compared with those in the ED group. It is possible that changes in relaxation times reflect lung fibrosis. Furthermore, MRI may provide additional information regarding lung diseases by providing functional images.