

MRI lymphatic imaging in patients affected by recurrent chylothorax

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Background:

Recurrent chylothorax can be due to different underlying causes and is associated with significant morbidity. As the pathogenesis of chylothorax may involve leakage of thoracic duct and other lymphatic vessels, we planned to visualize lymphatic vessel abnormalities in patients with recurrent chylous pleural effusions using magnetic resonance imaging (MRI).

Methods:

Eight patients (three with Fontan circulation, two after complex cardiac surgery, three with primary pulmonary disease and normal cardiac anatomy) at a median age of 4.3 (0.2-18.7) years with recurrent chylothorax resistant to conventional therapies underwent MRI lymphatic imaging using a T2-weighted respirator-navigated and cardiac-gated 3D turbo spin echo sequence. A dynamic contrast-enhanced MR lymphangiogram was performed after bilateral inguinal lymph nodes were assessed by conventional venous cannulas and MRI contrast media supplied.

Results:

In all but one patient MR lymphatic imaging was possible and demonstrated abnormally dilated paravertebral lymphatic networks connected to the area of pleural effusion. A thoracic duct was identified in 7 of the 8 cases. Abnormal branching of the lymphatic vessels was seen in 6 patients. Contrast enhanced imaging of the lymphatic system was complicated by insufficient local contrast uptake probably due to difficult puncture of small inguinal lymph nodes.

Conclusions:

T2-weighted MRI imaging may serve as a non-invasive tool to detect abnormal lymphatic connections to pleural effusions including potential leaks. Contrast enhanced MR-lymphangiography may be limited by small subcutaneous lymphatic structures in young patients.