Three-Dimensional Contrast-Enhanced Magnetic Resonance Angiography in a Patient With Chronic Thromboembolic Pulmonary Hypertension Before and After Thromboendarterectomy

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The patient was a 69-year-old man with progressive dyspnea during the previous 5 years and no history of thromboembolic events. By means of spiral CT scanning and multiplanar digital subtraction angiography of the pulmonary arteries, chronic thromboembolic pulmonary hypertension was diagnosed. Mean pulmonary artery pressure and pulmonary vascular resistance were elevated to 46 mm Hg and 890 dyne·s·cm⁻², respectively. The patient underwent successful pulmonary thromboendarterectomy, whereby mean pulmonary artery pressure and pulmonary vascular resistance could be substantially reduced to 20 mm Hg and 237 dyne·s·cm⁻², respectively.

Three-dimensional contrast-enhanced MR angiography of the pulmonary vasculature clearly depicted the thromboembolic lobar and segmental artery occlusions and stenoses in both lungs as well as the marked postoperative improvement of pulmonary perfusion (Figure).

Three-dimensional contrast-enhanced MR angiography of pulmonary vasculature. A, Preoperative and B, postoperative "maximum-intensity projection" reconstructions of three-dimensional data sets that were acquired in 25 seconds during suspended respiration. Before surgery, there is marked occlusion of several segmental arteries due to thromboembolic material in left lower lobe artery, extending into segmental arteries (arrow) as well as in peripheral segmental arteries of right lung (arrowhead) (A). After surgery (B), a nearly complete normalization of arterial vasculature of left lung and improvement of right lung perfusion were demonstrated.
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