RENAL ARTERY STENOSIS

Renal artery stenosis—predicting responses to revascularization

Dynamic contrast-enhanced (DCE)-MRI could potentially be used to predict revascularization outcomes in patients with renal artery stenosis (RAS), say researchers. In their study of 15 patients with atherosclerotic RAS, Steven Sourbron and colleagues used DCE-MRI to assess single-kidney glomerular filtration rate (SK-GFR), tissue perfusion and vascular parameters at baseline and 4 months after revascularization. They also measured SK-GFR using radioisotopes and report good agreement between the two techniques.

The researchers found that kidneys that showed an improvement in SK-GFR after revascularization ($n = 5$) had significantly lower extraction fractions, higher blood volumes, longer tubular-transit times and lower SK-GFRs at baseline than those that deteriorated ($n = 4$) or remained stable ($n = 13$). After revascularization, the researchers noted a significant increase in the amount of functional tissue in the kidneys that improved.

"These results support the hypothesis that in kidneys with low extraction fractions some of the tissue is hibernating—it has adopted a lower metabolic state in an attempt to prevent damage caused by the sustained reduction in blood supply," says Sourbron. "Restoring the blood flow by intervention reactivates this hibernating tissue." He suggests that if validated, DCE-MRI could be used to identify patients who are likely to benefit from revascularization and thereby avoid subjecting patients who are unlikely to benefit to the procedure.

Ellen F. Carney

Original article Lim, S. W. *et al.* Prediction and assessment of response to renal artery revascularization with dynamic contrast-enanced magnetic resonance imaging: a pilot study. *Am. J. Physiol. Renal Physiol.* doi:10.1152/ajprenal.00007.2013