Clinical Practice Committee
Management of Atherosclerotic Renal Artery Stenosis (RAS)

Sources:

Clinical Question:
In patients with hypertension and atherosclerotic renal artery stenosis (RAS), does percutaneous transluminal renal artery angioplasty plus stenting (PTRA-S) improve renal function, blood pressure control or mortality compared to aggressive medical therapy alone?

Bottom Line:
Despite the increase in renal artery interventional procedures for the treatment of atherosclerotic renal artery stenosis (RAS) in the United States, the clinical advantages of revascularization with PTRA-S over medical treatment alone have not been demonstrated in a Level 1 clinical trial. A variety of clinical criteria have been used to select patients for PTRA-S (e.g. accelerated hypertension, resistant hypertension, malignant hypertension, hypertension with a unilaterally small kidney, hypertension with intolerance to medication, renal insufficiency, recurrent CHF or “flash” pulmonary edema, refractory CHF, and refractory angina pectoris). It remains unclear, however, which clinical parameters are most useful in selecting patients for PTRA-S.

Study Design
Retrospective Case Series

Synopsis:
There have been three randomized clinical trials of patients with RAS that compared percutaneous renal angioplasty (PTRA) to medical therapy. None of these studies showed a significant difference in systolic blood pressure between treatment groups. There have been criticisms of these studies, including the fact that none of them have compared medical therapy to percutaneous renal angioplasty with stents (PTRA-S). Some Level 3 studies have suggested that better outcomes are achieved with PTRA-S than with PTRA alone, especially when distal protection devices are used. However, no Level 1 or Level 2 studies have been published. A Level 1 study, the CORAL Study, is currently enrolling patients to better clarify which patients with RAS may benefit from PTRA-S. Study completion is expected by 2010.

In the study cited above, among 100 patients, 37 received conservative therapy (CT), and 63 received endovascular therapy (ET). Most of the CT patients had the diagnosis made incidentally during angiographic evaluation for lower extremity arterial insufficiency. The possibility of PTRA or PTRA-S was excluded in some of the CT patients because of cardiac conditions, such as symptomatic coronary artery disease (CAD). Of the 63 ET patients, 32.8% received PTRA; and 67.2% received PTRA-S. This intervention group was chosen on the basis of resistant hypertension (requiring 2 or more drugs) and/or unexplained azotemia (i.e., a different clinical scenario than that of the CT group). Follow-up data was available for a median period of 28 months (range, 1-60 months). The probability of survival in patients who underwent PTRA or PTRA-S was 86.74%, compared with 67.13% for those in the CT group.
Blood pressure control was also better in the ET group (57.4% vs 29%), and there was a slower decline in renal function (17.9% vs 48.4%) in the ET group. This is a poor quality study for a number of reasons. The two groups were significantly different. Most CT patients were hypertensive with RAS diagnosed incidentally during evaluation for lower extremity vascular disease, not because of resistant hypertension. Most of the ET patients were referred specifically because of resistant hypertension or unexplained azotemia. A number of the patients in the CT group were deemed poor candidates for PTRA or PTRA-S because of cardiac conditions, making comparisons with the ET patients problematic. The patients in the CT group were significantly older than those in the ET group, and the ET patients had a higher baseline diastolic blood pressure. Patients in the CT group also had lower HDL values, and a much higher burden of peripheral vascular disease. There was no clear protocol for follow-up, and, therefore, it is difficult to assess whether patients in the ET group received more aggressive risk factor management than the CT patients.

There are numerous patient education materials on renal artery stenosis. One guide, offered by the Agency for Healthcare Research and Quality (AHRQ), can be found at: http://effectivehealthcare.ahrq.gov/repFiles/RAS_Consumer.pdf.