Renal Artery Stenosis: To Stent or Not to Stent

Hassan N. Ibrahim, M.D., M.S.

HOUSTON METHODIST HOSPITAL, HOUSTON, TEXAS

The column in this issue is supplied by Hassan N. Ibrahim, M.D., director of the Division of Kidney Diseases and Hypertension in the Department of Medicine at Houston Methodist Hospital and a fellow of the American Society of Nephrology. Dr. Ibrahim joined Houston Methodist in May 2017 after serving as a professor of medicine and chief of nephrology at the University of Minnesota.

Although the prevalence of renovascular hypertension (RVH) is rare (< 1%) in patients with mild hypertension, it appears to be present in 10% to 40% of those with refractory hypertension and in those with widespread atherosclerotic disease, particularly peripheral arterial disease. Its clustering with atherosclerotic disease elsewhere gave rise to the practice of treating the renal artery as one would treat coronary vessels (i.e., with angioplasty or stenting). In fact, employing these techniques to better control blood pressure and preserve kidney function was rather common until recently. When the question arises about whether or not to stent, consider these guidelines:

- A stenosis > 75% of the renal artery is considered significant.
- Deterioration of the glomerular filtration rate after initiation of an angiotensin converting enzyme inhibitor or angiotensin receptor blocker, as well as unexplained hypokalemia and recurrent flash pulmonary edema, should raise concern for renovascular hypertension.
- There is a concern that medical therapy does not address the progression of stenosis, which is expected to occur in 60% of all renal artery stenoses. Moreover, normalization of blood pressures may theoretically lead to ischemic atrophy as the pressure gradient across the stenosis drops.
- Meta-analysis of three randomized trials suggested benefit for mainly angioplasty (a slight improvement in blood pressure) in a total of 210 patients, indicating that larger trials are needed.
- The ASTRAL trial[1] randomized 806 patients to renal artery revascularization (95% were stented) versus medical therapy, with the following results:
  - No survival advantage in the stented group
  - No benefit for renal function in the stented group
  - Serious complications with stenting (2 deaths, 3 amputations, others)
- The CORAL study randomized patients to stenting versus medical therapy (N = 947), with a primary end point of major cardiovascular or renal events and a mean follow-up time of 43 months.[2] There was no benefit to stenting with either the primary or secondary end points.
- Collectively, the evidence does not support stenting of renal artery stenosis because it conveys no survival benefit, no renoprotection, and no decrease in the need for antihypertensive medications.
- A debate remains about whether or not it is beneficial to stent for purely ostial lesions.
- Smoking cessation and thoughtful blood pressure control are the mainstays of managing renovascular hypertension.

REFERENCES

1. ASTRAL Investigators, Wheatley K, Ives N, et al. Revascularization versus medical therapy for renal-artery stenosis. N Engl J Med. 2009 Nov 12;361(20):1953-62.

2. Cooper CJ, Murphy TP, Cutlip DE, et al.; CORAL Investigators. Stenting and medical therapy for atherosclerotic renal-artery stenosis. N Engl J Med. 2014 Jan 2;370(1):13-22.