Reviewer's report

Title: Reversal of End-Stage Renal Disease After Aortic Dissection Using Renal Artery Stent: Case Report

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Reviewer: Suresh Vedantham

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General

There exist many published case reports and three case series of > 10 patients describing percutaneous renal revascularization in the setting of complicated aortic dissection. However, there is a paucity of this information in the renal literature, and the fact that stent placement can result in renal salvage for patients with dissection-related chronic renal insufficiency is a worthwhile one to emphasize to nephrologists who are likely to see these patients in practice.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

1. In the Abstract, Case Report, and Discussion sections, the two distinct modalities of percutaneous balloon angioplasty and stent placement are lumped together as "percutaneous angioplasty and stent". In fact, percutaneous balloon angioplasty is not considered to be particularly likely to restore flow across a branch vessel dissection flap. On the other hand, primary stent placement is a very good way to address such a problem. Although excessive detail is not needed, the authors should briefly state whether angioplasty was used before stent placement (and if so what the angiographic and hemodynamic result was after angioplasty alone), what type and diameter of stent was used, and whether the aortic origin of the stent was within the true or false aortic lumen.

2. It is very possible (but by no means certain) that the right kidney could have been salvaged were percutaneous intervention to have been performed during the patient's initial admission when the CT scan clearly demonstrated renal malperfusion. Typically, when one performs angiography in such patients, one of several findings can be seen: inflow limitation to the renal artery due to aortic lumen compromise (common, treatable); stenosis of the renal artery related to dissection flap (common, treatable as in the left kidney in this case); and thrombosis of the renal artery (less common, not treatable). In fact, to this reviewer, the most important point this case report illustrates is that early angiography and intervention in this subset of patients can be important in preventing poor renal outcomes. That said, I do understand that the threshold for referring a patient to angiography for the CT finding of malperfusion is higher in institutions in which percutaneous renal interventions for aortic dissection complications is a new treatment option. However, the authors should discuss their opinions on the optimal timing of intervention.

3. In the Discussion, the authors accurately describe 3 endovascular techniques that have been used in aortic dissection patients: branch vessel stent placement, balloon fenestration, and aortic stent-graft placement. The authors should also add placement of bare aortic stents to this list (before stent-graft placement). The latter two modalities are distinct: longer bare stents are used to prop open a true lumen with diffuse collapse/compression; and short stent-grafts are used to just cover the primary dissection tear in order to redirect flow into the true lumen and thereby relieve perfusion abnormalities.
Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

4. In several places, the authors refer to "occlusion" or "compression" of the true lumen". Because the actual etiology of this phenomenon is unclear (and because existing evidence from hemodynamic studies like that of Chung et al (Radiology 2000; 214(1):99-106) indicates that low resistance in the peripheral vascular beds is a contributing factor), the authors should change these phrases to "collapse/compression" or some such intermediate term. This may seem a bit semantical, but because current concepts regarding the mechanism of true lumen compromise are changing rapidly, it's best to be somewhat more nuanced in its description.

Discretionary Revisions (which the author can choose to ignore)

5. In this reviewer's opinion, the case report would be better presented with the Previous Admission information condensed a bit and presented before the current Case information. In particular, the fact that the patient had a known history of chronic Type B Dissection should be presented first.

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No

Declaration of competing interests:

None.