Reviewer's report

Title: An acute rupture of a sinus of Valsalva aneurysm into the right atrium: a case report and a narrative review

Version: 0 Date: 29 Nov 2019

Reviewer: Humberto Morais

Reviewer's report:

The case, besides being well documented, is also described in a clear and concise way. However, I would like to make the following considerations:

1. The authors write that "Our case report is a special case of SVA rupture in to both right sided cardiac chambers"
   The case described herein is a type IIIa + v in original Sakakibara & Konno classification system for ruptured sinus of Valsalva aneurysm (1962). In fact, this type is very rare. In a review of the literature made by me in 2014, which included 1921 patients rupture of aneurysm into both right atrium and ventricle was found in 0.2% of cases.

2. The authors write that "The diagnosis was missed on routine CTPA examination as the aneurysm was small and the contrast communication between aortic root and right atrium/ventricle was not obvious until further reconstruction was performed in hindsight"
   I believe that the diagnosis was missed on routine CTPA because, given the initial diagnosis, the protocol for pulmonary thromboembolism was used. In these cases, the coronary angio CT protocol is ideal because it allows seeing the passage of contrast from the aorta to the right heart chambers in diastole.

3. The authors write that "Several imaging modalities are available to diagnose an SVA with or without rupture. Traditionally echocardiography, either transthoracic or transesophageal, has been the first-line imaging technique. Other imaging tools include multi-slice computed tomography (MSCT) and magnetic resonance imaging".
   Authors should also add three-dimensional echocardiography, which today has become a very important imaging technique, not only in the diagnosis of rupture of sinus of Valsalva, but also in guiding its percutaneous closure;

4. Finally, the authors write that "Surprisingly this patient did not have aortic regurgitation but demonstrated diastolic flow reversal in thoracic aorta most likely due to the significant left-to-right shunt from the aortic root to the right sided cardiac chamber creating similar hemodynamic physiology as severe aortic regurgitation".
   A diastolic flow reversal in the thoracic aorta (in the absence of aortic regurgitation) is always present in these patients (is not a surprise) and definitely results from regurgitation of blood from the aorta to the right cardiac cavities during diastole and indicates that the lesion is severe.
I recommend that the authors should read the following reference


**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

Yes

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If not, please specify which controls are required in your comments to the authors.

Yes

**Are the conclusions drawn adequately supported by the data shown?**
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