Reviewer's report

Title: Does Left Atrial Volume Affect Exercise Capacity of Heart Transplant Recipients?

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Reviewer: Ana Galrinho

Reviewer’s report:

The link between left atrial volume (LAV) and cardiovascular events (risk of death, stroke, heart failure and also myocardial infarction) is proved in a general patient population in sinus rhythm and normal ejection fraction. The importance of this parameter in the prognosis of patients with heart failure and cardiac resynchronization therapy population has been evaluated by recent papers with multivariate analysis.

Left atrial volume reflects left ventricular diastolic properties. Enlarged left atrium correlates with left ventricular (LV) diastolic function, mitral E/A, ratio E/E’ and also pro-BNP. In a recent paper, in a multivariate analysis; age, mitral E/A and indexed LAV were independent predictors of exercise capacity. The combination of LV diastolic dysfunction and enlarged LAV predicted worse exercise intolerance.

In this paper, Abdul-Waheed tried to correlate the limited exercise capacity (ventilatory efficiency) of heart transplant patients with LAV (indexed LAV) and the change in LAV (the variation in LAV from pre-transplant echocardiogram to post transplant echocardiogram) and obtained a modest correlation to indexed LAV (r=0.278) and a better one to the change in LAV (r=0.457).

(Discretionary revisions)

However, heart transplant patients are a peculiar type of population. The heart suffers from rejection episodes with corresponding fibrosis, the immunosuppressive drugs (directly or as an agent that favors hypertension and obesity) can impair diastole, and many others causes can contribute for dilatation of left atrium. Other explanation is that the surgical scar of the anastomosis between the primitive and the donor atrium could impair the normal function of the left atrium, impeding the correct pump function and increasing the reservoir capacity. It could be interesting to compare the two types of usual surgical anastomosis: bicaval and pulmonary veins anastomosis versus right and left atria conventional anastomosis.

The population analyzed has normal diastolic and systolic function, with normal ejection fraction and a normal value of E/E’ at rest. However 61% of the patients have hypertension. Diastolic dysfunction can occur only with exercise due to abnormalities of left ventricular relaxation.

(Major compulsory revisions)
Other aspect is cardiac rhythm of the patient; are all the patients in sinus rhythm? Atrial flutter and fibrillation are frequent in transplant patients and worsen the prognosis.

With other type of statistical analysis – univariate or multivariate analysis, this paper could improve and enhance the real importance of left atrial volume in heart transplant patients.

(Minor essential revisions)
The last but not the least, “Orthotropic HT means orthotopic HT”?

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

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I have no competing interests