Author’s response to reviews

Title: Global longitudinal strain correlates to systemic right ventricular function

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Reviewer reports:

Changes in the manuscript, tables and figures have been highlighted yellow in the text. Commentaries are yellow and cursive.

Reviewer #1: In this study the authors sought to evaluate the RV function in patients with systemic RV (CC TGA and TGA post atrial switch). They correlate the RVEF evaluated by CMR with TTE, Nt-ProBnp and exercise test parameters. They found, as already published, a correlation between RVEF and RV GLS

The topic is of interest however many limitations and criticisms have to be addressed:

- Sample size very small also in consideration with the heterogeneous group of patients, this point has been reported in the limitation paragraph by the authors
Response: The sample size is small, this limitation is however not possible for us to influence. The sample size was narrowed as we have put high requirements in the inclusion criteria in order to give this study its uniqueness, which is to study the relationship between RVEF and the other parameters during the same time. Earlier studies have analyzed the relationship to mentioned parameters, but separately. Secondly, the RVEF is derived by cardiac MRI, which also narrows the population, as it is not so liberally used. With further included descriptives on VSD-closure, history of arrhythmia, tricuspid regurgitation, baffle leak and LVEF, we see that the study population is not heterogenous.

- In the result section of the abstract: the authors didn't report the significant results

Response: This was completed during the review process.

- The methodology is poorly described mainly echocardiography study

Response: We have added further descriptions in the method section about cardiac MRI, exercise stress test.

- Nt proBNP usually didn't have a normal distribution and usually NT-proBNP values are log transformed?, it's not mentioned in the statistical analysis section.

Response: NT-proBNP were not normally distributed and therefore log transformed. This has been added to the methods.
- A more detailed characterization of the population should be reported for instance did any of patients with atrial switch have a baffle stenosis or leak?, how was the tricuspid regurgitation in the CCTGA group. It could be interesting also to have more information about adverse outcome as arrhythmia or heart failure in this population.

Response: The venous left ventricular function (LVEF) was measured with echocardiography. This has been added in the methods, page 5.

The venous LVEF derived from echocardiography was 41% (34-47%) in patients who had undergone atrial switch operation and 40% (27-40%) in the ccTGA patients. This has been added in the results, page 6.

The venous LVEF derived from echocardiography did not correlate to the logBNP \((r=-0.545, p=0.130)\).

Descriptive characteristics have been added on moderate tricuspid regurgitation (severe was not seen), VSD-closure, baffle leak and history of clinical arrhythmia, see results section and tables.

Regarding outcomes, this can be approached in a possible future study where we have a follow-up, but for the present one, the needed data is not available.

- How did the authors explain higher nt proBnp in ccTGA?

Response: The BNP and the log BNP did not differ between the patients with ccTGA and the patients who had undergone atrial switch operation (Mann Whitney U test; \(p= 0.167\)). The groups are too small to do any sub analyses and to have enough power to do analyse differences between the groups.
Response: The relationship between NYHA class and the systemic RVEF, exercise test results, NT-proBNP, NYHA class and echocardiographic parameters (GLS, TAPSE, FAC, AP4 and SAX) was evaluated using the Spearman correlation coefficient. This has been clarified in the methods.