Reviewer’s report

Title: Energetic performance analysis of staged palliative surgery in tricuspid atresia using vector flow mapping

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Reviewer: Francesco Ancona

Reviewer's report:

This manuscript by Mao Kinoshita et al is an interesting case report on the usefulness of vector flow imaging in the analysis of energy performance in the setting of congenital heart disease.

I have some concerns:

- Methods are not so clear, in term of analysis and definitions: please expand this part; in particular it is not clear how energy loss is analyzed from vector flow imaging

- It is not so clear what are, if any, prognostic implications of energy performance: it is just a matter of load status assessment? Energy is load and pressure dependent and load in the peri-operative setting depends on multiple variables (e.g. blood loss). I don’t think that Energetic performance analysis is useful only to better assess load status than classic hemodynamic parameters.

- What are the implications of this analysis on myocardial performance, if any

- This is a case report, so conclusion could not be extended into a general setting.

- The abstract needs to be revised in order to be more clear with a straight message ("These energetic parameters can simply indicate the volume loading condition while classic hemodynamic parameters cannot easily indicate the volume loading condition", this sentence is not clear and not so straight; "Vector flow mapping is useful tool for monitoring congenital heart disease surgery", monitoring what?).

- Lines 65-68 => be more schematic about hemodynamic parameters (a table?) and comment in the discussion about their possible influence on energetic performance

- Lines 81-83 => as previous

- Lines 125-131: this should be stated in the discussion; please also comment on the meaning of energy loss in terms of "wasted" energy not contributing to cardiac output

- Figures are quite ok, although the quality is not excellent. Videos are very interesting!
- In figure legend 2 please comment on possible differences between B and C.

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