Author's response to reviews

Title: A case report on the clinical benefit of Cardiac Resynchronization Therapy optimization using a device-based hemodynamic sensor in a patient with dilated cardiomyopathy

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Title: A case report on the clinical benefit of Cardiac Resynchronization Therapy optimization using a device-based hemodynamic sensor in a patient with dilated cardiomyopathy
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Authors:

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Object: MS: 1998209257156797 A case report on the clinical benefit of Cardiac Resynchronization Therapy optimization using a device-based hemodynamic sensor in a patient with dilated cardiomyopathy. Dr Mario Volpicelli et al.

Thank you for consideration of our manuscript for publication in your journal.

We have reviewed the above manuscript to your reviewer’s comments.

Reviewer’s comments:

"There is only a single paragraph discussion. The case needs to be thoroughly discussed in light of past cases and its uniqueness."

In an attempt to address this comment, the Discussion section was rewritten as follows:

Discussion

This non-responder patient could not be optimized, because of paroxysmal AF. Once AF ceased, weekly AV and VV delays optimization were automatically activated, using a hemodynamic device-based sensor. Symptoms (NYHA) and ventricular function (LVEF, mitral regurgitation, ventricular filing) were significantly improved after 2-months of CRT optimization.

Significant clinical improvements after AV and VV optimization were previously reported in two studies evaluating device-based optimization algorithms (5, 9). In the randomized (1:1), single-blind, multicenter CLEAR trial comparing CRT-P optimized using SonR and CRT optimized according to centers’ usual practice, mostly by echocardiography. One year results showed an improvement of symptoms (NYHA functional class) in 83% of patients versus 64% in patients treated with CRT alone (p=0.002). The evolution of QRS duration, LVESD and LVEF was similar in both arms from baseline to 1 year (5).

In a recent paper by MM Oliveira et al., 17 patients implanted with the SonRtip atrial lead and CRT-D device showed a significant increase in LVEF, with a 76.5% rate of reverse remodeling, defined as an improvement of at least one NYHA functional class and a decrease >15% of their LVESV at 6 months compared with baseline (10).

These pilot studies and preliminary results warrant an evaluation of the device in a controlled randomized trial. The double-blinded, multicenter, noninferiority RESPOND CRT trial will assess the clinical effectiveness and reverse remodeling of systematic automatic optimization versus a single echocardiographic optimization after implantation (11).
In this case report, QRS did not appear to be an index for CRT response, as it remained stable throughout the follow-up.

**Conclusions**

Device-based automatic AV and VV delays CRT optimization significantly improved symptoms and ventricular function in a non-responder patient, after two months.