CARDIAC CONTRACTILITY MODULATOR IN ATRIAL FIBRILLATION AND LVEF <25%: A SPECIAL CASE WHEN OPTIONS ARE SCARCE

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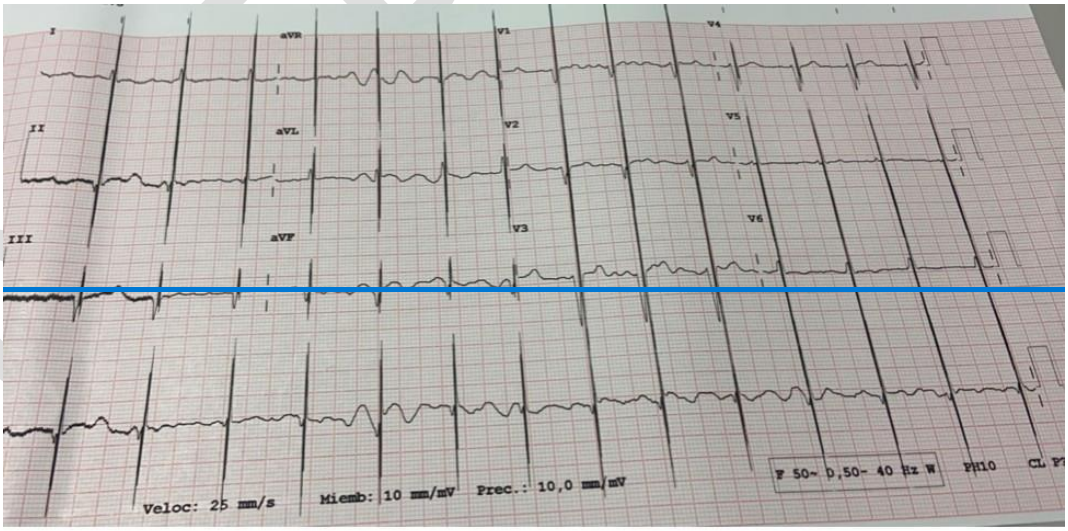
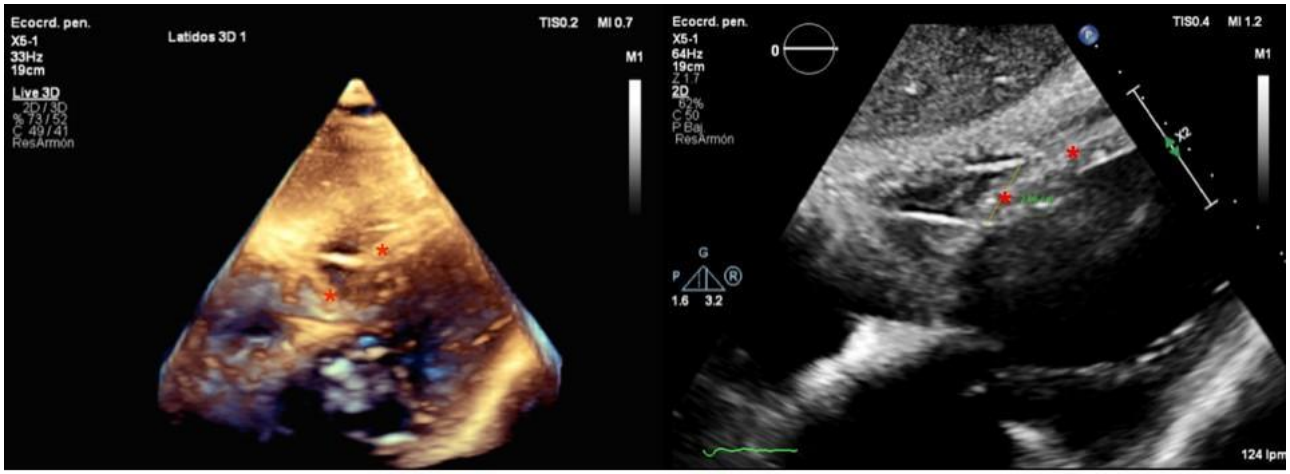
Background:

A 68-year-old-man with hypertension, dyslipidaemia, type 2 diabetes, and obesity. Past cardiovascular history of permanent atrial fibrillation with narrow QRS under anticoagulant treatment and HF with left ventricular ejection fraction (LVEF) 22% due to dilated ischemic cardiomyopathy. He was symptomatic with a minimum effort dyspnoea (New York Heart Association class II-III) and orthopnoea. He was under optimal guideline-directed medical treatment including Sacubitril/Valsartan, Sodium-glucose Cotransporter 2 Inhibitors (SGLT2i), beta-blockers and mineralocorticoid receptor antagonists (MRAs); reason why he has an Implantable Cardioverter Defibrillator (ICD) in sudden death primary prevention. He was rejected to heart transplantation be- cause of multiple comorbidities and borderline age. During the last two years, his quality of life had been severely impaired because of multiple readmissions due to acutely decompensated heart failure and requirement of almost monthly inotropic agent infusions.



ECG showing CCM discharges in atrial fibrillation



3D and 2D ECHO showing leads (*) implanted in the septum separated by 2cm.

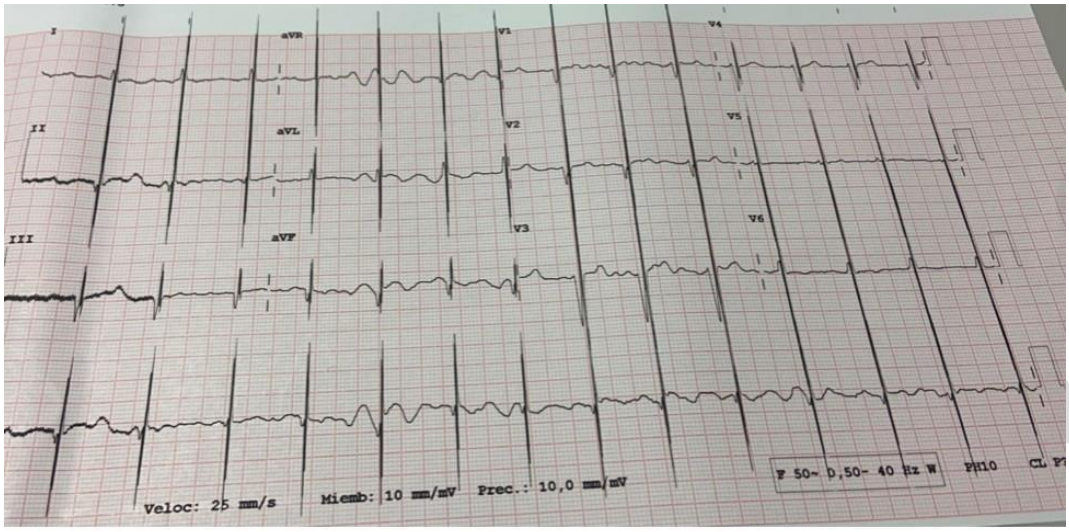
Indication for intervention:

Once our patient had been rejected for heart transplantation and because of his rapid functional worsening

—accordingly, to his narrow QRS which made him unsuitable for cardiac resynchronization therapy (CRT)— the best option was to assess the feasibility of a cardiac contractility modulator (CCM) implantation.

Intervention:

The device implantation was approved and carried out by the Arrhythmia Unit in April 2021, without immediate complications. Since device implantation, Levosimendan infusion requirements, admissions, and NT- proBNP levels have been markedly reduced. There was also a slight improvement in LVEF up to 27% and more importantly, the patient experienced an improvement in quality of life and functional class (NYHA II).



ECG showing CCM discharges in atrial fibrillation

Conclusion:

On one hand, our patient presented a very severe LV systolic function with an LVEF of 22%, lower than that of the population reflected in the different clinical trials. A sub analysis (FIX-HF-5C) suggested that the effective- ness of treatment could be higher in the subgroup of patients with moderately depressed LVEF (>35%). On the other hand, our patient was in permanent atrial fibrillation (AF), a scenario poorly studied but approved in the device's data sheet. In these cases, AF makes it difficult to detect the device, although even though the percentage of stimulation in case of high rates may decrease, in general terms they are comparable. This is an initial limitation of CCM, since up to half of patients with HF and ventricular dysfunction may pre- sent with AF. Despite this, in our case an adequate percentage of stimulation was obtained thanks to optimal control of the ventricular rate. Based on our case, we can suggest that CCM implantation is a good option in patients with LVEF <35% and atrial fibrillation when other options are scarce.