Fragmented QRS, a predictor of clinical events in patients on cardiac resynchronization therapy

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Introduction: Cardiac resynchronization therapy with defrilator (CRT-D) has been shown to reduce mortality in HFrEF. The width and morphology of the QRS are essential when deciding on the implantation of these devices. QRS fragmentation (fQRS) has been shown to be a good predictor of cardiovascular events in certain patients, but its role in patients with CRT-D has not been studied. The aim of this study is to determine whether the presence of a fQRS at the time of CRT-D implantation can predict clinical events.

Methods: All patients who underwent CRT-D implantation from 2010 to 2017 were included. Patients' ECG were evaluated at the time of implantation, and the incidence of clinical events during follow-up was also assessed. fQRS was defined as the presence of an RSR' pattern with a notch in the R wave or in the ascending or descending branch of the S wave in two continuous leads on the ECG.

Results: We studied 131 patients (mean age 73 years, 76.5% male). The mean follow-up period was 37±26 months. No difference in baseline characteristics was found (Table 1); the proportion of fQRS was 48.9%. 25 patients (19.1%) had hospital admissions secondary to cardiovascular causes (heart failure, arrhythmic events, acute coronary syndrome, and death from other causes). We performed a multivariate logistic regression analysis aiming at an association between the presence of fQRS and the increased risk of hospital admissions due to cardiovascular causes OR 2.92 (95% CI: 1.04–8.21, P=0.04).

Conclusion: The presence of a fQRS at the time of implantation of a CRT-D is an independent predictor of hospital admissions due to cardiovascular causes. Therefore this could be a useful marker to identify the population at high risk of cardiovascular events, for this we consider necessary to conduct future studies and thus assess the value of the fQRS for the selection of patients requiring closer monitoring thus avoiding further hospital admissions.

Baseline characteristics	
Age (y/o)	73 (67–78)
Male	101 (76.5%)
Ischemic heart disease	68 (51.5%)
fQRS	64 (48.9%)
Basal LVEF (%)	25 (15–30)
Mean follow-up (months)	37±26
MACE (%)	25 (19.1%)
End-study LVEF (%)	32 (25–45)