Can adjustments in voltage criteria unmask conducting channels in patients with post-infarction ventricular tachycardia?

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BACKGROUND

High density substrate mapping during sinus rhythm is useful to delineate post-infarction endocardial scar and allows characterization of possible reentry circuits of ventricular tachycardia (VT), as conducting channels.
Adjustments in voltage criteria might unmask potential channels by discriminating subtle areas of healthy tissue.

PURPOSE

To assess the correlation between electrophysiological findings able to identify conducting channels in patients with ischemic VT and bipolar maps using different voltage cutoff values.

METHODS

Patients with post-infarction VT submitted to substrate guided ablation using CARTO-UNIVU mapping system and Pentaray catheter
october 2015 – september 2017 (n=15)

All patients had an endocardial bipolar voltage map under sinus rhythm (median of total points/map 1563 [IQR 1400]).

Electrograms with delayed, high frequency, fractionated and low voltage components (LP) were tagged and correlated with conducting channels.

Different voltage cutoffs were used to identify scar area and were compared offline with standard voltage cut-off and correlated with electrophysiological findings.

A: 0,5-1,5mV | B: 0,3-1,0mV | C: 0,2-0,8mV | D: 0,1-0,5mV

Patients with epicardial or right-sided VTs origin were excluded.

RESULTADOS

Median Age: 69 years-old [IQR=11]

Male gender: 86,7%

Median Ejection fraction: 30% [IQR 10,8]

VT ablation was successful in 80% of the patients.
During a median follow-up of 6 months, 2 pts had VT recurrence and 2 died.

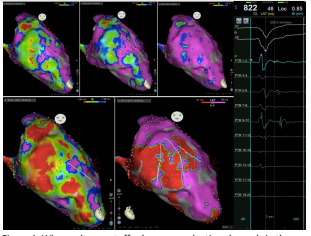

Figure 1. When voltage cutoffs change, conducting channels in the scar are revealed.

	A: 0,5-1,5	B: 0,3-1,0	C: 0,2-0,8	D: 0,1-0,5
Scar	76,5cm² [IQR 26,2]	61,0cm² [IQR 48,8]	47,7cm² [IQR 31,1]	26,4cm² [IQR 32,8]
Conducting channels	0 [IQR 0-2]	1 [IQR0-4]	2 [IQR 1-4]	1 [IQR 0-3]
LP within dense scar	80,0%	49,3%	40,0%	0%

CONCLUSION

When voltage cutoffs were changed, conducting channels in the scar and multiple areas with late potentials were revealed (figure 1). The optimal cutoff was 0,2-0,8.