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BACKGROUND:

Non-sustained ventricular tachycardia (NSVT) is commonly found in patients with structural heart disease and was historically obtained from registers of external ambulatory monitoring. The advent of cardiovascular implantable electronic devices (CIEDs) has made it possible to detect asymptomatic NSVT in Heart Failure (HF) patients more frequently, but its true impact in real world is uncertain, and often does not lead to a change in clinical intervention.

PURPOSE:

To determine the prognostic significance of NSVT detection on stored electrograms of CIEDs in HF patients with systolic left ventricle dysfunction.

METHODS:

We retrospectively enrolled 132 consecutive HF patients (mean age $67,5 \pm 11,1$ years, males 72,0%) with systolic left ventricle dysfunction and CIEDs (biventricular pacemakers with or without cardiac defibrillators). Patients were evaluated through CIEDs interrogation and clinical evaluations and divided into NSVT positive (Group 1) and negative groups (Group 2). Mean follow-up period was $62,8 \pm 7,1$ months.

RESULTS:

Table 1 - Baseline characteristics and outcomes

Baseline	All patients (n=132)
NSVT ¹ , n (%)	51 (38,6)
CIEDs ² , n (%)	
• CRT-D ³	70 (53,0)
• ICD ⁴	37 (28,0)
• CRT-P ⁵	13 (9,8)
• S-ICD ⁶	12 (9,1)
Mean LVEF ⁷ (mean \pm SD)	$31,1 \pm 7,9\%$
NYHA ⁸ III-IV, n (%)	27 (20,6)
Ischemic aetiology, n (%)	62 (47,0)
All cause death, n (%)	11 (9,3)
Sudden cardiac death, n (%)	2 (1,5)
Non-sudden cardiovascular death, n (%)	5 (3,8)

Table 2 – Comparison of both groups

Variables	Group 1	Group 2	p
Gender male, n (%)	35 (68,6)	60 (74,1)	ns
Usual NYHA ¹ III-IV, n (%)	11 (21,6)	16 (19,8)	ns
Ischemic aetiology, n (%)	25 (51,0)	37 (47,4)	ns
Dyslipidemia, n (%)	15 (29,4)	42 (51,9)	0,042
Atrial fibrillation, n (%)	14 (27,5)	34 (41,9)	ns

NYHA¹: New York Heart Association functional class

NSVT¹: Non-sustained ventricular tachycardia; CIEDs²: cardiovascular implantable electronic devices; CRT-D³: implantable cardiac resynchronization therapy defibrillator; ICD⁴: transvenous implantable cardioverter defibrillator; CRT-P⁵: implantable cardiac resynchronization therapy pacemaker; S-ICD⁶: subcutaneous ICD; LVEF⁷: left ventricular ejection fraction; NYHA⁸: New York Heart Association functional class

Table 2 – Non-sustained ventricular tachycardia and related outcomes

Outcome	Hazard ratio (HR)	95% Confidence interval (CI)	p
CIEDs ¹ treatments	2,52	1,2 – 5,1	0,001
VF ²	3,71	1,19 - 11,58	0,018
VT ³	9,06	2,82 – 29,12	< 0,05
Composite outcome ⁴	2,52	1,20 – 5,10	0,011
Outcomes in the first year	NSVT positive	NSVT negative	p
HF readmission at one year	38,5%	9,6%	0,004

CIEDs¹: cardiovascular implantable electronic devices; VF²: Ventricular fibrillation, VT³: Sustained ventricular tachycardia; Composite outcome⁴: VT, VF, HF re-admissions and related admissions to emergency department (ED) and death by all causes

CONCLUSIONS:

On extended monitoring possible with CIEDs, NSVT in HF patients was associated with a worse prognosis and may serve as a predictor of significant arrhythmic events, HF hospitalizations and mortality. These findings enhances the importance of remote monitoring and optimization of therapeutic modalities in these patients along with a close supervision.