

Avoiding Inappropriate Therapy of Single-Lead ICDs by Using Atrial-Sensing Electrodes

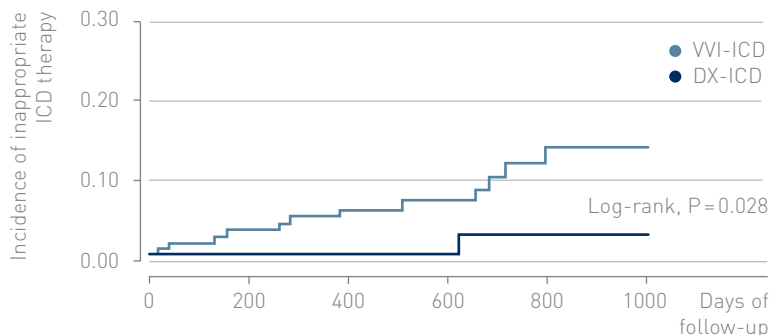
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Study Design

- Prospective, single-center, non-randomized
- To investigate whether the use of a single-lead ICD system with atrial-sensing electrodes (DX technology) results in a reduction of inappropriate ICD therapy compared to standard single-chamber ICDs (VVI)
- 212 consecutive patients who underwent primary prophylactic single-lead ICD implantation or replacement (77 patients with DX-ICD and 135 with VVI-ICD)

Main Results



Number at risk

VVI-ICD	134	120	99	71	43	18
DX-ICD	77	67	55	43	28	22

Significantly less inappropriate ICD therapies with DX technology



DX group



VVI group

1/77 [1%] vs
12/135 [9%],
P=0.028

The incidence of inappropriate ICD therapy was lower with DX, even though a previous history of AF was more frequent in the DX group.

Clinical Relevance

- Use of single-chamber ICDs can result in significant adverse events, such as inappropriate ICD therapies most commonly caused by AF and supraventricular tachyarrhythmias.
- It has been well known that the incidence of inappropriate ICD therapy is associated with poor patient outcomes.
- The efficacy of the DX-ICD system for preventing inappropriate ICD therapies may lead to improvements not only in the quality of life, but also possibly in the prognosis of the patients.

It Does Not Take Longer to Implant a DX System Than a VVI

No significant differences in fluoroscopic burden and operative duration between the DX group and the VVI group

Implantation parameters	DX group, N=77	VVI group, N = 135	P value
Fluoroscopic duration, new implants, min	3.5 [2.4, 5.9]	3.9 [2.3, 6.3]	0.98
Operative duration, min	55.2 ± 11.4	53.3 ± 13.3	0.33

DX Group: Less Inappropriate Therapies, Mostly Due to Less Inappropriate ATP

No significant difference in appropriate therapies between the DX group and the VVI group
Less inappropriate shocks with DX technology (tendency)

Follow-up results	DX group, N=77	VVI group, N = 135	P value
Appropriate ICD therapy, n (%)	11 (14)	15 (11)	0.50
Appropriate ATP therapy, n (%)	7 (9)	12 (9)	0.96
Appropriate shock therapy, n (%)	8 (10)	9 (7)	0.34
Total number of appropriate therapy	0.72 ± 3.36	0.55 ± 1.86	0.63
Inappropriate ICD therapy, n (%)	1 (1)	12 (9)	0.027
Inappropriate ATP therapy, n (%)	0 (0)	11 (8)	0.010
Inappropriate shock therapy, n (%)	1 (1)	8 (6)	0.11
Total number of inappropriate therapy, per patient	0.01 ± 0.11	0.70 ± 3.33	0.074
Follow-up period, days	723 ± 454	682 ± 353	0.46

Materials, Procedure and Programming

- DX-ICDs used: Lumax VR-T DX, Iforia VR-T DX, and Itrevia VR-T DX; leads used for DX: Linx Smart S DX and Linx Smart ProMRI S DX (BIOTRONIK SE & Co. KG)
- The selection of VVI-ICDs was at the discretion of the operator
- Positioning of the leads at the apex of the right ventricle
- In the DX group, the SMART algorithm was programmed "ON" (the SMART algorithm analyzes atrial and ventricular rates and compares them to each other, which enables discriminating VT/VF from supraventricular arrhythmias)

Source:

Kurt M et al. Avoiding inappropriate therapy of single-lead implantable cardioverter-defibrillator by using atrial-sensing electrodes. J Cardiovasc Electrophysiol. 2018 Dec;29(12):1682-1689. doi: 10.1111/jce.13736