

Which are the predictors of survival and ICD shocks in patients submitted to ventricular tachycardia ablation?

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INTRODUCTION

- Sustained monomorphic ventricular tachycardia (VT) is associated with an increased risk of mortality and morbidity in patients with ischemic heart disease (IHD). While implantable cardiac defibrillators (ICD) have been shown to reduce mortality in those patients and are effective in terminating VT, they are unable to prevent recurrent VT.
- Also, recurrent ICD shocks have been associated with an increase in all-cause mortality, hospitalizations for heart failure and are painful, resulting in impaired quality of life. Therefore, strategies to prevent ICD shocks are needed.

AIM: evaluate risk factors associated to all cause mortality and ICD shocks.

METHODS

- We conducted a prospective, observational, single-centre and single-arm study involving patients with IHD, referred for Radiofrequency catheter ablation (RCA) procedure for VT using high-density mapping catheters.
- Variables selected from a univariate analyses ($p < 0.10$) were entered into multivariable Cox proportional hazards regression models to estimate predictors of ICD shocks recurrence and overall mortality. All analyses were 2-sided and a P-value < 0.05 was considered statistically significant. Statistical analysis was performed using IBM SPSS Statistics 26™.

RESULTS

- From June 2015 to June 2020, a total of 64 consecutive patients were referred to our centre for a first RCA procedure using high density mapping for VT.
- The mean age was 68 ± 9 years, 95% were male. 83% of patients were in NYHA functional class II or I and mean LV ejection fraction was $33 \pm 11\%$.
- All-cause mortality was 23.4%. Age higher than 70 years ($p = 0.01$) and chronic kidney disease (CKD) were associated with reduced survival on univariate analysis.
- On multivariate analysis, CKD shown a tendency to reduced survival (HR 0.22; CI95%: 0.41-1.22, $p = 0.08$). No risk factors for ICD shocks were found (table 2).

RESULTS

Table 1. Univariate and Multivariate Analysis of Risk Factors Associated With All-cause Mortality

	Univariate HR (95% CI)	P value	Multivariate HR(95% CI)	P value
Age ≥ 70 yo	6.98 (1.55-31.48)	0.01	3.1 (0.57-16.83)	0.19
NYHA functional class III-IV	2.05 (0.64-6.58)	0.23	-	-
LVEF < 25%	0.44 (0.14-1.43)	0.44	-	-
Hypertension	0.63 (0.08-4.84)	0.66	-	-
Diabetes	0.49 (0.17-1.43)	0.19	-	-
CPOD	1.42 (0.32-6.40)	0.64	-	-
Renal failure*	0.12 (0.03-0.55)	0.01	0.22 (0.41-1.22)	0.08
PAINESD-score	2.5 (0.91-6.99)	0.76	-	-
Incomplete substrate ablations	2.15 (0.72-6.41)	0.17	-	-

Table 2 - Univariate Analysis of Risk Factors Associated With ICD shocks

	Univariate HR (95% CI)	P value
Age ≥ 70 yo	0.57 (0.16-1.94)	0.37
NYHA functional class III-IV	0.6 (0.08-4.84)	0.65
LVEF < 25%	2.04 (0.26-16.11)	0.50
Hypertension	0.04 (0.01-93.9)	0.41
Diabetes	0.98 (0.25-3.73)	0.98
CPOD	0.9 (0.20-4.3)	0.91
Renal failure*	1.6 (0.48-5.74)	0.42
PAINESD-score	0.43 (0.12-1.26)	0.19
Incomplete substrate ablation	1.3 (0.21-8.40)	0.76

CONCLUSIONS

- In our population, age and chronic kidney disease were associated with reduced survival, however no risk factors were associated with ICD shocks.