

CLINICAL PREDICTORS OF MORTALITY AFTER ICD IMPLANTATION

Mafalda Carrington (1), Tiago Rodrigues(2), Pedro Silvério António (2), Pedro Silva (2), Rafael Santos (2), Rita Rocha (1), Ana Bernardes (2), Fausto J Pinto (2), João de Sousa (2), Pedro Marques (2)
 (1) Serviço de Cardiologia do Hospital do Espírito Santo de Évora (2) Serviço de Cardiologia, Departamento de Coração e Vasos, Centro Hospitalar Universitário Lisboa Norte, Centro Cardiovascular da Universidade de Lisboa, Faculdade de Medicina, Universidade de Lisboa

INTRODUCTION

- **Implantable Cardioverter Defibrillators (ICD) therapy** is not recommended in patients who do not have a reasonable expectation of survival for at least 1 year, although **specific recommendations regarding clinical or functional status evaluation are lacking**

PURPOSE

- To identify **predictors of all-cause mortality** in patients who **implanted an ICD**

METHODS

- **Prospective single-center study** of patients with ICD for primary/secondary prevention, between 2015 and 2019
- Clinical characteristics evaluated at baseline
- Mortality was assessed using the national registry of citizens.
- **Statistical analysis:** Uni and multivariate analysis using Cox regression and Kaplan-Meier methods to compare clinical characteristics of patients who died and who survived. For the predictor creatinine, we assessed the discrimination power and the best cut-off using the area under the ROC curve (AUC) method.

RESULTS

414 patients with an ICD implanted → 50 (13%) died

Median follow-up: 23 [11-41] months

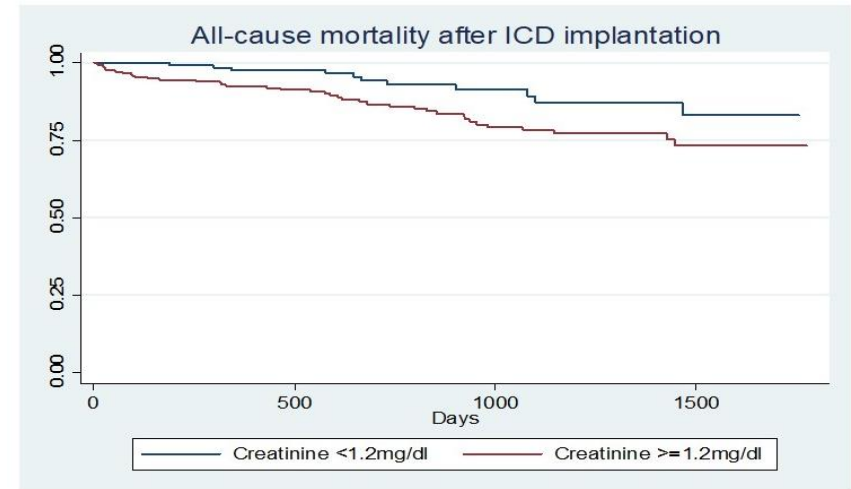
	Died (n=50)	Survived (n=348)	HR (CI95%)	p-value
Basal clinical characteristics				
Male gender, n(%)	41 (82%)	279 (80%)	1.057 (0.51-2.18)	0.881
Age, mean ± standard deviation	67 ± 9	61 ± 12	1.043 (1.02-1.07)	0.002
NYHA class ≥II, n(%)	22 (47%)	124 (42%)	1.117 (0.63-1.98)	0.706
Creatinine, median[inter-quartile range]	1.23[0.84-1.86]	1.00[0.84-1.22]	1.452 (1.20-1.76)	<0.001
Comorbidities				
Atrial fibrillation, n(%)	11 (22%)	72 (21%)	0.919 (0.47-1.80)	0.806
Hypertension, n(%)	43 (86%)	243 (73%)	1.870 (0.84-4.16)	0.125
Diabetes mellitus, n(%)	24 (48%)	112 (33%)	1.831 (1.05-3.19)	0.033
Dislipidemia, n(%)	37 (74%)	196 (59%)	1.731 (0.92-3.26)	0.089
Smoker or ex-smoker, n(%)	25 (50%)	163 (49%)	0.994 (0.57-1.73)	0.984
Ablation of atrial fibrillation or flutter or ventricular tachycardia, n(%)	1 (2%)	38 (11%)	0.151 (0.02-1.09)	0.061
ICD indication criteria				
Ischaemic CMP, n(%)	41 (82%)	196 (56%)	3.113 (1.51-6.41)	0.002
Dilated non-iCMP, n(%)	8 (16%)	94 (27%)	0.515 (0.24-1.10)	0.085
Other CMP or channalopathies, n(%)	1 (2%)	58 (17%)	0.130 (0.02-0.94)	0.043
Secondary prevention, n(%)	19 (38%)	114 (33%)	1.210 (0.68-2.14)	0.513
Left ventricle EF ≤50%, n(%)	48 (96%)	285 (82%)	4.389 (1.07-18.06)	0.040
ICD re-implantation after complication/pacemaker upgrade, n(%)	3 (6%)	7 (2%)	3.682 (1.14-11.94)	0.030
Need for device surgical revision during follow-up, n(%)	3 (6%)	18 (5%)	1.233 (0.38-3.97)	0.725

→ **Best cut-off value of creatinine to predict mortality = 1,2 mg/dl**

Sensitivity 65%
 Specificity 72%
 AUC 0.650; CI95% 0.53-0.77

- After adjusting for DM, i-CMP, EF≤50% and upgrade/re-implantation after complication, **Age (HR 1.033; 95%CI 1.00-1.06, p=0.041)** and **creatinine ≥ 1.2mg/dl (HR 2.134; 95%CI 1.09-4.19, p=0.028)** were independent predictors of all-cause mortality

Figure 1 – Association of clinical characteristics with mortality after ICD implantation



CONCLUSIONS

- In our cohort, the **all-cause mortality** over a median follow-up period of **23[11-41] months** was **13%**.
- We found that in addition to **age**, a **baseline creatinine level ≥ 1.2mg/dl** increases by **2-fold mortality** in patients who undergo ICD implantation.
- Decisions regarding ICD candidacy should not be based on age alone but should also consider creatinine that predisposes to mortality despite ICD implantation.