Improved Outcome in Ablation of Ventricular Tachycardia in Patients With Structural Heart Disease Under General Anaesthetic

IT Fazmin[1,2], RY Zhang[1,2], A Porto[2], K Divulwewa[2], A Reddy[2], J Gonzalez-Panizo[2], B di Nubila[2], MF Mausa[2], S Agarwal[2], D Begley[2], S Fynn[2], A Grace[2], P Heck[2], G Mellor[2], M Virdee[2], CA Martin[2]

[1] School of Clinical Medicine, University of Cambridge

[2] Royal Papworth Hospital NHS Foundation Trust, Cambridge

■ Introduction

- Radiofrequency ablation is used in the management of ventricular tachycardia refractory to drugs/device therapy and can be performed under general anaesthetic (GA) or conscious sedation
- Previous studies show benefit in using GA vs sedation (albeit in AF)[1,2]

■ Aims

- Primary hypothesis: use of GA yields improved outcomes compared to sedation
- Secondary goal: investigate if other variables affect outcomes in VT ablations

■ Methods

- Single centre retrospective study of patients with structural heart disease, ablation procedures conducted between January 2015 – April 2019
- Endpoint: VT recurrence or device therapy
- Statistical analysis: Chi square test, ANOVA & Cox regression proportional hazards model

■ Results and Discussions

- There may be a benefit of using GA vs sedation in VT ablation and use of amiodarone at the time of ablation, in reducing VT recurrence (Table 2, Fig 1)
- Surprisingly, hypertension seems to be a protective factor against VT recurrence (Table 2, Fig 1)
- Long-term outcome analysis is poorly represented in the literature [1,2,3,4]
- Disadvantages of GA: can lead to haemodynamic instability, difficult to induce VT
- Advantages of GA: can give vasopressor support if VT induced so easier to map, reduced movement so more accurate electro-anatomical map, increased patient comfort so easier to shock
- The present study is of limited scope and further study is required before influencing clinical practice

▪ Table 1: patient characteristics*

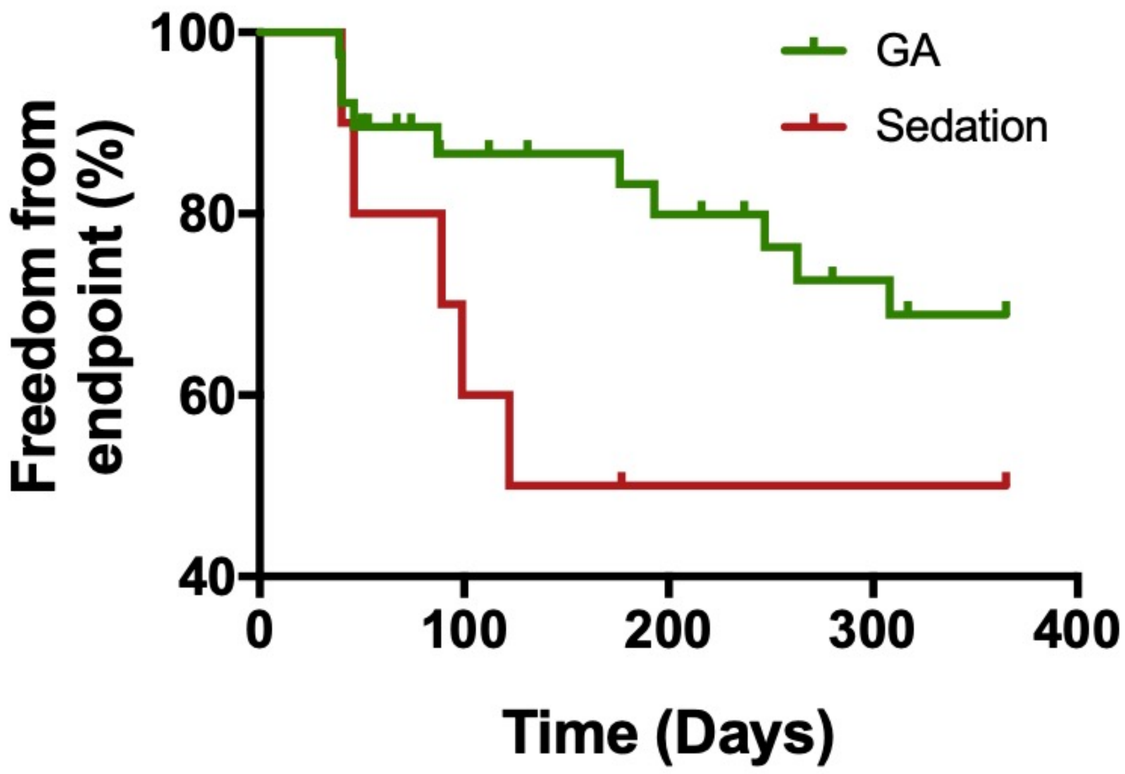
		Sedation	GA	P-value
Characteristic	Number	10	40	
	Age (years)	70 ± 11	70 ± 9	0.896
	Male sex (%)	90	90	1.000
Medical history	AF (%)	0	47.5	0.008*
	DM (%)	10	27.5	0.416
	HTN (%)	40	35	1.000
	CKD (%)	0	22.5	0.174
Procedure	Procedure length (min)	206 ± 47	236 ± 39	0.047*
Baseline medication	Amiodarone (%)	80	75	1.000
Ejection fraction (%)	40-50%	30	37.5	0.741
	30-40%	40	27.5	
	< 30%	30	35	

*Cases identified = 79 (data missing = 29, used in analysis = 50)

▪ Table 2: factors influencing likelihood of reaching endpoint at one year post-ablation

	Multivariate analysis		
Predictors	**HR**	**95% CI**	**P-value**
Age at ablation	0.919	0.831 - 1.017	0.101
Sex	2.214	0.169 - 28.951	0.545
DM	0.620	0.103 - 3.745	0.602
HTN	0.072	0.007 - 0.750	0.028*
CKD	7.243	0.748 - 70.124	0.087
AF	5.483	0.749 - 40.116	0.094
Amiodarone	0.036	0.003 - 0.404	0.007*
Scar Age	1.001	0.917 - 1.094	0.977
LVEF 40-50%	0.183	0.029 - 1.147	0.070
LVEF 30-40%	0.216	0.024 - 1.952	0.172
Procedure length	1.011	0.996-1.027	0.996
GA	0.055	0.006 - 0.495	0.010*

▪ Figure 1: Kaplan-Meier curve of freedom of reaching endpoint, GA and sedation groups



References:

[1] Claire A Martin et al., 2018. "Improved Outcome and Cost Effectiveness in Ablation of Persistent Atrial Fibrillation under General Anaesthetic." EP Europace 20 (6): 935–42.

[2] Luigi D Biase et al. 2011 "General Anesthesia Reduces the Prevalence of Pulmonary Vein Reconnection during Repeat Ablation When Compared with Conscious Sedation: Results from a Randomized Study." Heart Rhythm 8 (3): 368–72.

[3] Yi Deng et al., 2016. "Anesthetic Management in Radiofrequency Catheter Ablation of Ventricular Tachycardia." Texas Heart Institute Journal 43 (6): 496–502.

[4] A Killu et al., 2018. "Impact of Sedation vs. General Anaesthesia on Percutaneous Epicardial Access Safety and Procedural Outcomes." EP Europace 20 (2): 329–36.

[5] E Nof et al., 2015. "Impact of General Anesthesia on Initiation and Stability of VT during Catheter Ablation." Heart Rhythm 12 (11): 2213–20.

Acknowledgements: Conference travel costs were provided by the Cambridge University Students' Clinical Research Society (CUSCRS) and the Papworth Hospital Charity