68 ROUTINE CARDIAC IMPLANTABLE ELECTRONIC DEVICE CHECKS ARE NOT REQUIRED AFTER DIRECT CURRENT CARDIOVERSION

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Background At our institution, Cardiac Implantable Electronic Devices (CIEDs) are routinely checked after elective direct current cardioversion procedures (DCCV) to ensure that the leads and generator have not been damaged. Anecdotally, this was perceived to be an unnecessary intervention. A comprehensive assessment of the impact of DCCV on device parameters and programming would allow either a change in practice to be safely undertaken, or to justify this ongoing use of resources.

Method We retrospectively evaluated the routine post procedure device checks performed on consecutive patients with CIEDs undergoing elective DCCV at our institution between 2013 and 2019. Lead parameters (impedance, high voltage impedance, amplitude and capture threshold) recorded immediately post DCCV, were compared to the previous recorded values for each device. Atrial threshold and P wave amplitudes were not assessed as they would have been significantly altered by conversion of atrial dysrhythmia to sinus rhythm, rather than by the procedure itself. Where values could not be determined at either of the two device checks (pre or post DCCV), for example no R wave amplitude due to absence of underlying rhythm, this parameter was excluded from the data set. Values before and after DCCV were compared using a paired samples t test. Lead thresholds were assessed in volts, provided the pre and post DCCV checks used the same pulse width. The incidence of programming changes as a direct result of DCCV was also calculated.

Results A total of 53 patients were identified for analysis (60.3% male, mean age 73 +/- 15 years). All patients underwent an elective DCCV receiving up to 3 shocks (starting at 150J) with defibrillation pads placed in conventional positions (either anterior-posterior or anterolateral) >8cm from the CIED generator. Device types were dual chamber pacemaker 51%, single chamber pacemaker 11%, CRT-D 11%, DR-ICD 9%, CRT-P 8%, VR-ICD 6% and S-ICD 4%. CIED manufacturers were Medtronic 66%, Boston Scientific 21%, Abbott 11%, and Microport (Sorin) 2%. The mean time between pre DCCV and post DCCV device checks was 4.7 +/- 2.7 months.

The mean changes in lead parameters (presented with 95% confidence intervals) were as follows; impedance -7.4 ohms (-22.0 to +7.3, p=0.32, n=90), high voltage impedance -0.2 ohms (-3.7 to +3.4, p=0.92, n=17), amplitude -0.1 mV (-0.7 to + 0.6, p=0.80, n=38) and lead threshold -0.01 V (-0.07 to +0.04, p=0.64, n=57). The incidence of device reprogramming as a result of DCCV was found to be 0% (n=53).

Conclusion DCCV is not associated with statistically significant changes in lead impedance, amplitude or threshold across a range of CIED devices. DCCV is not associated with a need for alterations in device programming post procedure. Providing the standard protocol and pad positions (anterior-posterior or anterolateral, >8cm from CIED generator) for DCCV in patients with CIEDs are followed, there is therefore no requirement for a routine CIED check post DCCV.

Conflict of Interest None

69 EFFECT OF ATRIAL FIBRILLATION ON ENDOTHELIAL FUNCTION IN PATIENTS WITH HYPERTENSION

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Background Atrial fibrillation (AF) and hypertension commonly co-exist and both are associated with endothelial dysfunction. A key consequence of normal endothelial function in vivo is the ability to release nitric oxide (NO) in response to physiological stimuli, such as increased flow, reflecting flow-dependent endothelium-mediated dilatation (FMD). FMD measurement using a high-resolution ultrasound has become a reliable and reproducible technique for assessment of endothelial dysfunction.

Purpose To investigate whether endothelium-dependent FMD is more abnormal in patients with AF and hypertension when compared to hypertension alone.

Design In a cross-sectional comparison, we studied two patient groups: AF and hypertension (n = 61) and hypertension control group (n = 33). High-resolution ultrasound was used to measure brachial artery diameter at rest and during reactive hyperaemia (endothelium-dependent FMD). Data was analysed using SPSS software.

Results Participants were matched for age, sex and body mass index (BMI). There was no significant difference in FMD between permanent AF and hypertension group and hypertension control group (4.6%, 95% confidence interval (CI) [2.6 – 5.9] vs 2.6%, 95% CI [1.9 – 5.3]; p = 0.25). No variables were identified on univariate analysis and only heart rate was identified on multivariate analysis as an independent predictor of FMD (p = 0.04).

Abstract 69 Table 1 Differences in FMD

	AF + hypertension group (n =40)	Hypertension control group (n =20)	p
Clinical Demographics	**Mean ±SD/Median [IQR]**	**Mean ±SD/Median [IQR]**	
Age, years	66 ± 7	65 ± 7	0.71
Sex			0.84
Male	29	15	
Female	11	5	
BMI (kg/m^2)	32.9 ± 5.2	32.1 ± 4.2	0.58
Heart rate	70 [60 – 82]	63 [58 – 67]	**0.02**
FMD Measurements	**Mean [95% CI]/ Median [95% CI]**	**Mean [95% CI]/ Median [95% CI]**	**p**
Baseline diameter (mm)	4.6 [4.4 – 4.9]^a	5.2 [4.8 – 5.6]^a	**0.02**
Peak diameter (mm)	4.9 [4.6 – 5.2]^a	5.4 [5.0 – 5.8]^a	**0.03**
Absolute FMD change (mm)	0.2 [0.1 – 0.3]^b	0.2 [0.1 – 0.3]^b	0.61
FMD (%)	4.6 [2.6 – 5.9]^b	2.6 [1.9 – 5.3]^b	0.25
FMDc (%)	4.9 [3.8 – 6.0]^a	4.3 [2.8 – 5.9]^a	0.56
Time to peak diameter (sec)	58 [40 – 90]^b	36 [21 – 65]^b	0.07
Shear rate stimulus (Positive shear rate area to peak) [sec.-1]	4421 [2800 – 6077]^b	3300 [1296 – 6887]^b	0.41

Normally distributed data are expressed as mean [95% confidence intervals (CI)]. Identified by superscript a. Non-normally distributed data are displayed as median [95% CI]. Identified by superscript b. Statistical differences were tested using independent t-test (for parametric data) or Mann-Whitney U test (for non-parametric data). Significance p ≤ 0.05.
AF = atrial fibrillation; BMI = Body Mass Index; bpm = beats per minute; FMD = flow mediated dilatation; FMDc = FMD adjusted for baseline diameter