

Cardiovascular Magnetic Resonance in Survivors of Sudden Cardiac Arrest - 14 Year Experience from a Tertiary Referral Centre in the United Kingdom

Category: Arrhythmia and Clinical EP

Keywords: Sudden cardiac death; Ventricular fibrillation; Magnetic resonance imaging

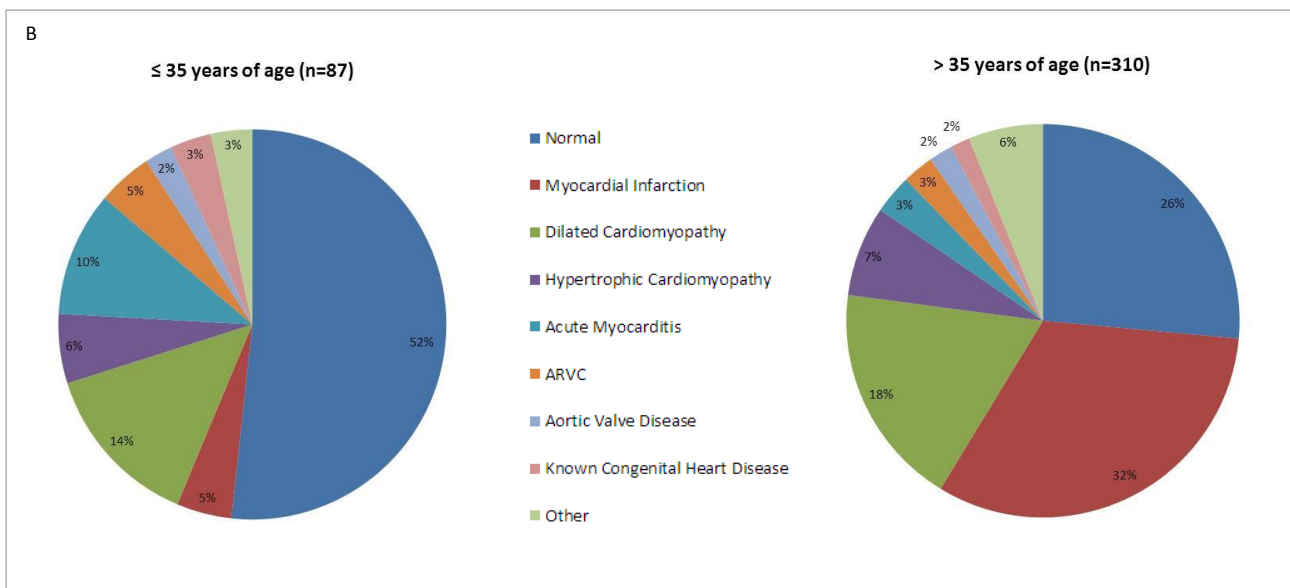
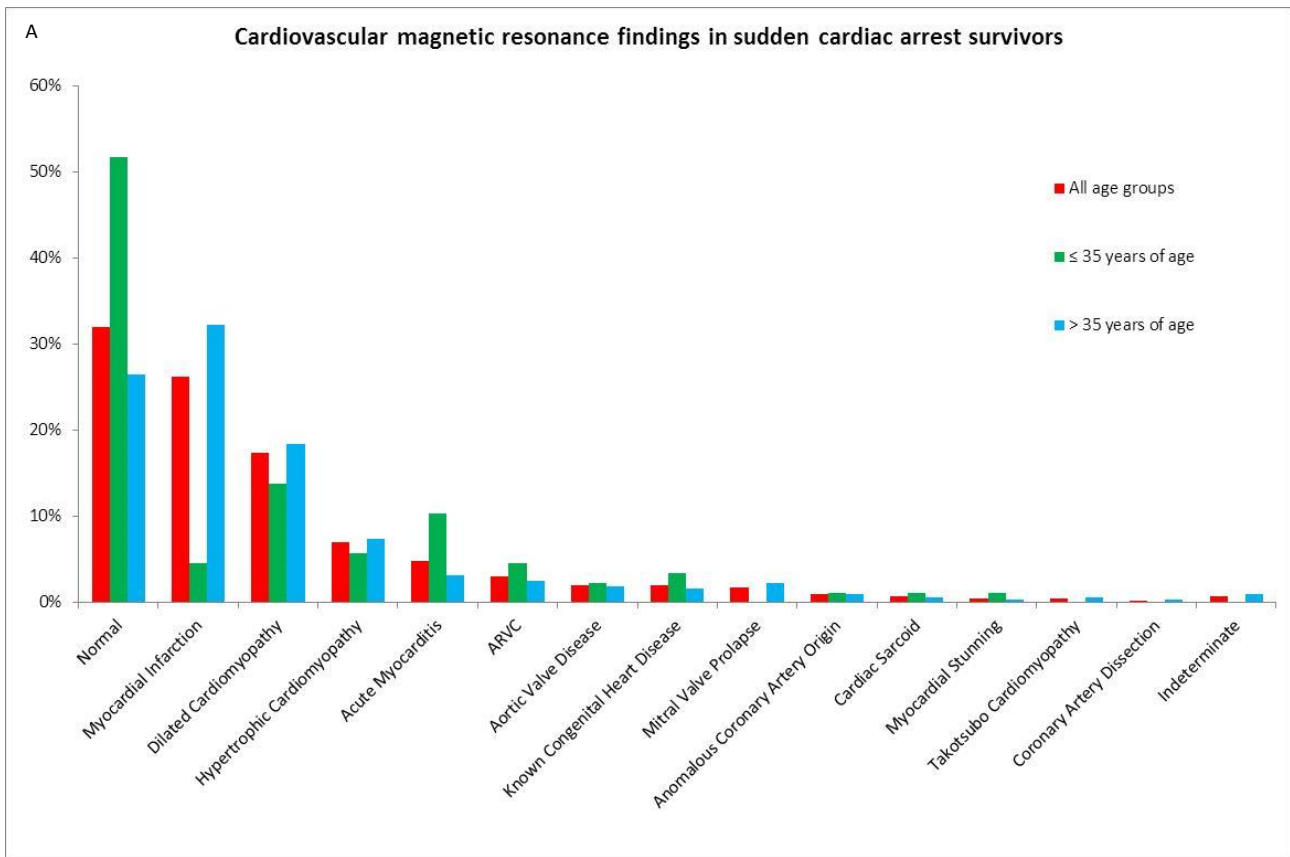
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Background: Sudden cardiac death arises from a spectrum of age-related cardiovascular disease demonstrated on autopsy-based studies (Finocchiaro et al 2016). However, in survivors of sudden cardiac arrest (SCA), cardiovascular magnetic resonance (CMR) facilitates *in-vivo* tissue characterisation directly relevant to patient management but not supported by current guidelines.

Method: CMR data from consecutive patients (2002-2016) referred within 6 months of aborted SCA were retrospectively reviewed.

Results: Of 397 patients (age 50 ± 18 yrs, 59% male) undergoing contrast enhanced CMR, rhythm disturbances were ventricular fibrillation (62%), ventricular tachycardia (8%), pulseless electrical activity/asystole (4%) and unknown (26%). In patients ≤ 35 yrs of age (n=87), the study was normal in 52%. The most common diagnoses were dilated cardiomyopathy (14%) and acute myocarditis (10%). In patients >35 yrs (n=310), myocardial infarction was found in 32% and a normal study in 26%. Late gadolinium enhancement was present in 22% ≤ 35 yrs compared to 78% >35 yrs, including 7% in both groups with an otherwise normal study.

Conclusion: Despite varying time intervals from SCA to CMR within a single centre, age-related CMR findings were similar to previous autopsy-based studies. CMR was able to robustly exclude structural abnormalities and effectively identify potential arrhythmic substrates such as acute myocarditis and myocardial fibrosis *in vivo* with important diagnostic and management implications.



CMR findings in survivors of sudden cardiac arrest in all subjects (A), further subdivided into ≤35 years and >35 years of age (B). The subgroup classified as 'other' is composed of the diagnoses listed in figure A with a frequency of <2% in this cohort.