Risk factors associated with Cardiac Sarcoidosis: Analysis of 499 patients from the multicentre PAPLAND study

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Introduction

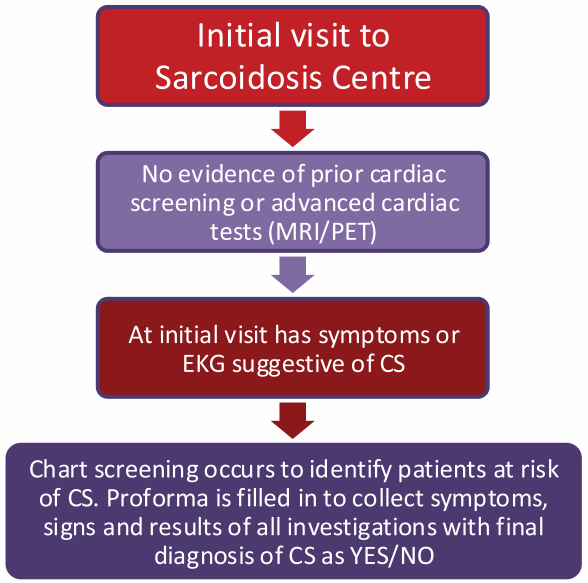
Cardiac Sarcoidosis (CS) requires advanced imaging (PET/MRI) for diagnosis. The value and weighting of clinical signs/symptoms, examination and routine investigations remains unclear to risk stratify patients with possible CS. As part of the FSR sponsored multi-centre PAPLAND study, chart screen reviews were performed in patients with suspected CS at 12 global sarcoidosis centres. Data was collected in order to determine if there were factors which could identify patients at risk of CS. This study arm (chart screen) was separate to the randomised arm of PAPLAND (data from that arm will be reported separately).

Methods

A chart screen review was performed in patients presenting at the 12 global sarcoidosis centres. Inclusion criteria were: a) new presentation of sarcoidosis, b) symptoms suggesting need to investigate for CS, c) no prior advanced cardiac imaging. We collected data from clinical charts using a standard RECAP proforma to capture relevant information from history, examination and simple investigations including EKG, holter and echocardiogram.

We fitted a logistic mixed model with presence/absence of CS as endpoint, the predictor as fixed effect, and sites as random intercepts, controlling for within-site dependence. P-values from the two-sided Wald z-tests were adjusted for multiplicity using Benjamini and Yekutieli procedure to control for 5% false discovery rate. The final diagnosis of CS was based on current WASOG guidelines.

Study flow (in chart screen arm)



Results

Data from 499 patients was collected. Mean age was 54 years, 48% were female, 75% were white. 38% were current/ex-smokers. The most prevalent co-morbidities were hypertension (39%), hyperlipidaemia (19%) and diabetes (14%). 50% reported palpitations, with 46% occurring at any time and only 10% daily. 31% of patients noted chest pains. 18% of all patients experienced syncope or presyncope. 80% had no cardiac abnormalities on physical examination and only 10% had abnormal cardiac blood biomarkers. 56% had ECGs as part of initial evaluation and of these, the most common abnormality was bundle branch block (17% RBBB, 17% non-RBBB). 41% had echocardiograms, of which 26% were abnormal, the most common being low LVEF (16%). 29% had ambulatory ECGs, of which 30% were abnormal, the most common being frequent PVCs, SVT and non-sustained VT.

In the final diagnosis, 21% of patients were determined to have CS. Estimates of logistic mixed models controlling for sites of enrolment and separately fitted on each predictor of interest showed several predictors associated with CS including BBB on ECG other than RBBB ($p<0.001$), abnormal echocardiogram ($p=0.005$), raised serum troponin ($p=0.04$), raised serum BNP ($p=0.044$) and hypertension ($p=0.04$). Palpitations or chest pain were not found associated with CS.

Conclusions

In the largest study of its kind to date, we found that 1 in 5 of patients suspected of CS had a final determination of the condition. A number of predictors were associated with CS including raised cardiac biomarkers, hypertension and abnormalities in EKG and echocardiogram. No single symptom showed association. A predictive model is currently being built to weigh these risk factors as part of a potential scoring system.

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PAPLAND on ClinicalTrials.Org

Presenting Author Information and FSR QR code

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FSR Homepage StopSarcoidosis.org