

Sarcoidosis and Postoperative Cardiac Complications: Clinical insights from a retrospective propensity score overlap weighted analysis.

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Background:

- Sarcoidosis is a rare systemic granulomatous disorder characterized by lung involvement but frequently involves the heart, gastrointestinal system and lymphatic organs. Typically presents in young and middle-aged adults
- Significant geographic and racial variation (Black Americans: 2.4% cumulative lifetime risk vs. 0.85% in White Americans)
- Studies suggest that cardiac causes (25%; congestive heart failure, myocardial infarction, arrhythmias) followed by pulmonary fibrosis (9%) constitute the primary causes of mortality.
- High incidence of cardiac sarcoidosis (CS) and pulmonary hypertension (PH) related to progression to fibrotic lung disease.

Objective:

- Few studies have investigated sarcoidosis-related postoperative cardiac complications.
- Using a retrospective comparative cohort analysis study design, the authors hypothesized that sarcoidosis would be an independent risk predictor for postoperative pulmonary complications (primary endpoint) and cardiac complications (secondary endpoint).
- Using this design, 30-day **cardiovascular complications** were identified to determine their association with sarcoidosis.

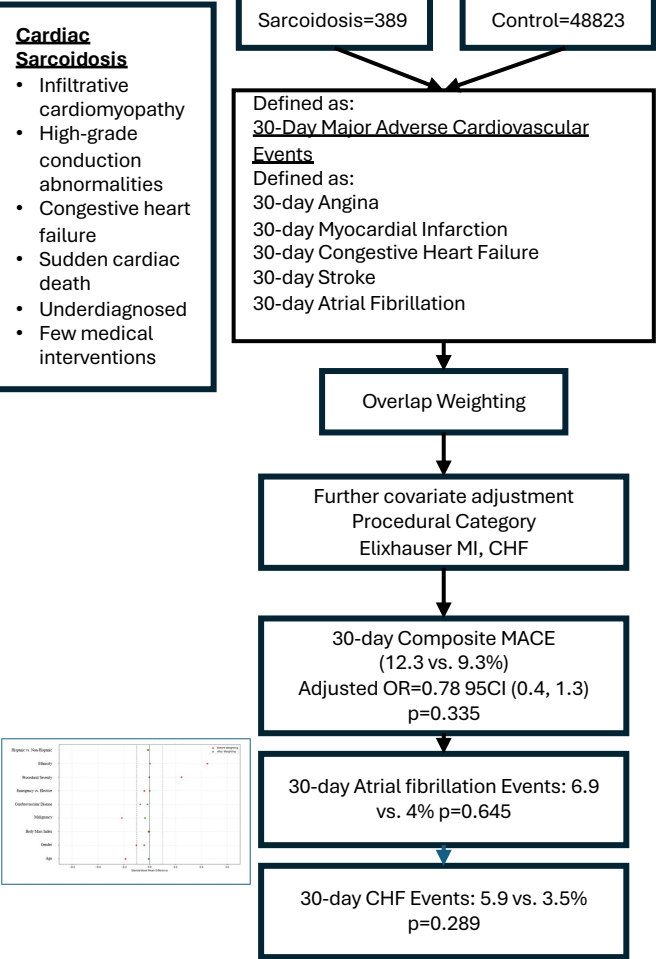
Methods:

- Retrospective comparative cohort analysis
- 389 adult patients with sarcoidosis (18-99 years old)
- 48823 patients without sarcoidosis (18-99 years old)

Criterion: Sarcoidosis [ICD-10: D.86 (1-9)] documented not in remission within 12 months of procedure by subspecialist consultation notes (rheumatology/pulmonary medicine).

Statistical Approach:

- Initial univariate analysis determined significant differences in baseline covariates.
- Age, gender, racial background, procedural severity, multiple Elixhauser comorbidities)
- Overlap weighting (OW) statistical method
- Mimics balance achieved by prospective randomized clinical trials.



Sub-cohort Analysis*

Higher rates of **cardiopulmonary (PPC + MACE)** complications in sarcoidosis patients with:

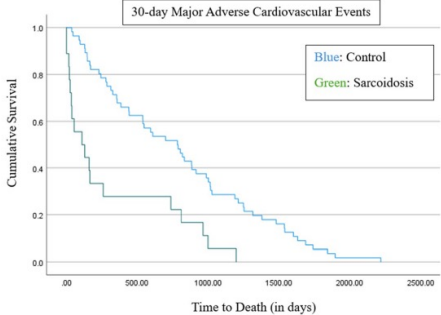
- Lower FEV₁, % predicted (80.8 vs. 83.1%)
- DLCO, % predicted (49.6 vs. 62%)
- Higher right ventricular systolic pressure (echo) 16.9 vs. 13.8 mmHg, p<0.001***)**
- Lower LVEF (54.7 vs. 59.5%, p=0.004)**

*Bonferroni Correction significance: ***

Survival Sub-Analysis

Though MACE events did not differ:

- Median survival after MACE events was lower (109 days vs. 381 days, p<0.001) when compared to controls.
- Higher risk for respiratory failure/insufficiency coding after MACE events. (27.1 vs. 14.8%, p<0.001)



Clinical Implications

- Exploratory 30-day MACE events were higher but not statistically different after covariate balancing.
- Higher rates of respiratory failure/insufficiency coding after MACE events suggests that they are more severe, when compared to controls.
- Survival after MACE events was lower and right-skewed suggesting considerable impact from 30-day MACE events.
- Current preoperative evaluation highly reliant on EKG and echocardiography. Not adequate to determine presence of cardiac sarcoidosis. (Cardiac MRI, PET scanning needed).
- Higher rates of right ventricular afterload may contribute to postoperative fluid overload and CHF events.
- Lack of high-quality evidence for CS management.
- Preoperative proBNP, subspecialty optimization may be warranted when clinical suspicion is high for CS.

Conclusions

- Although the secondary endpoint of 30-day MACE events was not significant after covariate balancing, these findings suggest preoperative optimization opportunities.
- Cautious interpretation of survival data is needed, given the low number of deaths (n=72) in the study time period.
- Preoperative optimization, likely with sub-specialty assistance should be considered to characterize the extent of cardiac disease and reduce postoperative MACE events.

References

- Cheng RK, et al. Diagnosis and Management of Cardiac Sarcoidosis: A Scientific Statement From the American Heart Association (2024).
- Yafasova A et al. Long-term Adverse Cardiac Outcomes in Patients With Sarcoidosis. (2020).