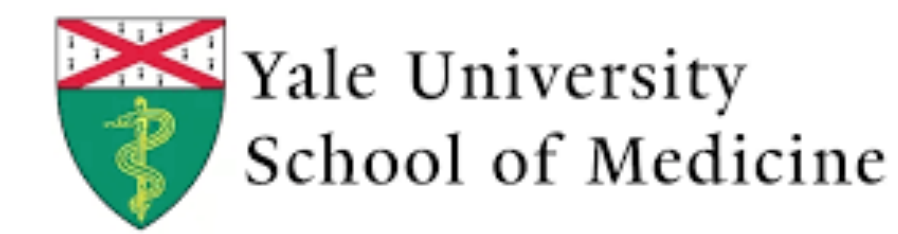


Sarcoidosis and Postoperative Pulmonary Complications: Clinical insights from a retrospective propensity overlap weighted analysis.

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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).
- Most common variant of pulmonary fibrosis.
- Studies suggest that cardiac causes (25%; congestive heart failure, myocardial infarction, arrhythmias) followed by pulmonary fibrosis (9%) constitute the primary causes of mortality.

Objective:

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

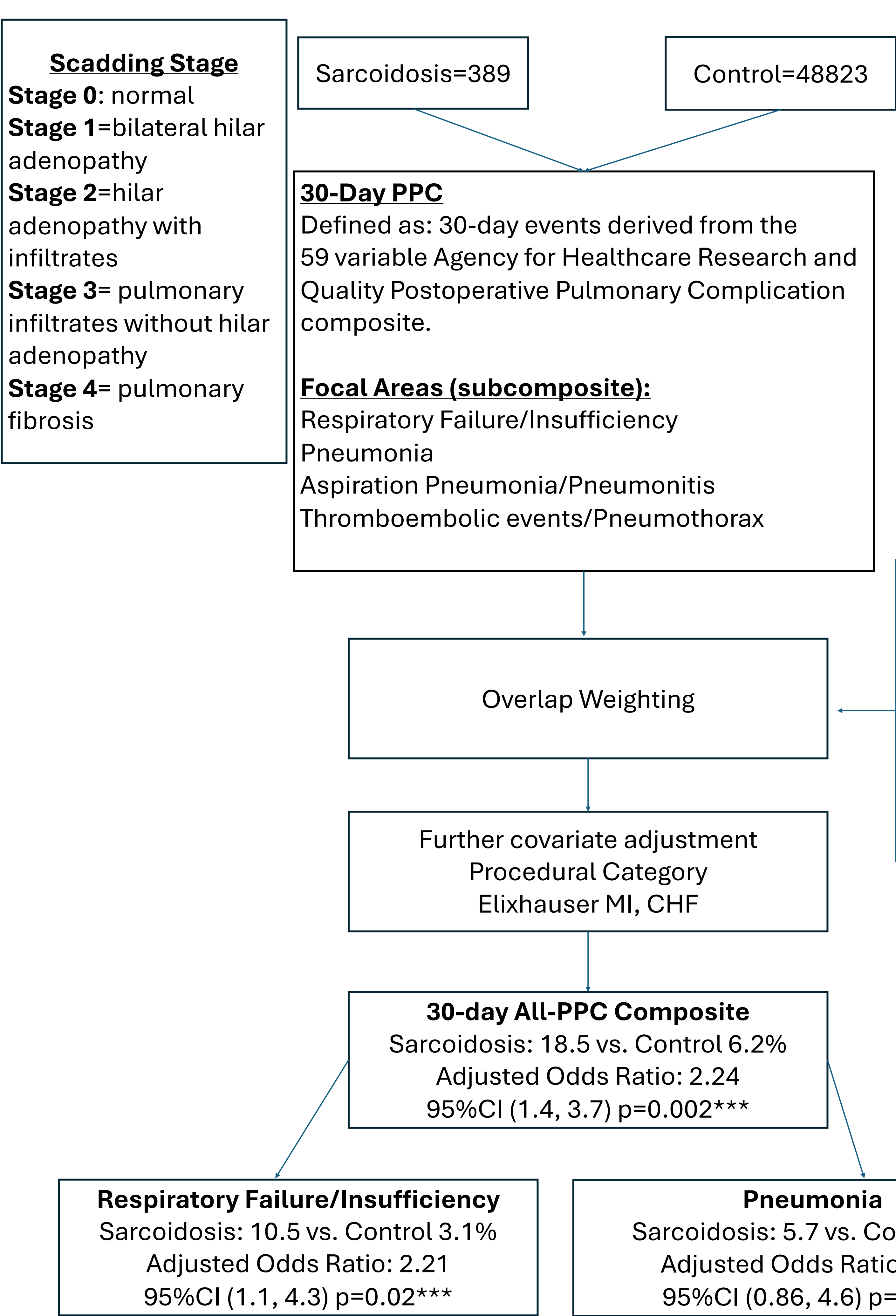
Methods:

- 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 (**Figure 1**).
- Mimics balance achieved by prospective randomized clinical trials.

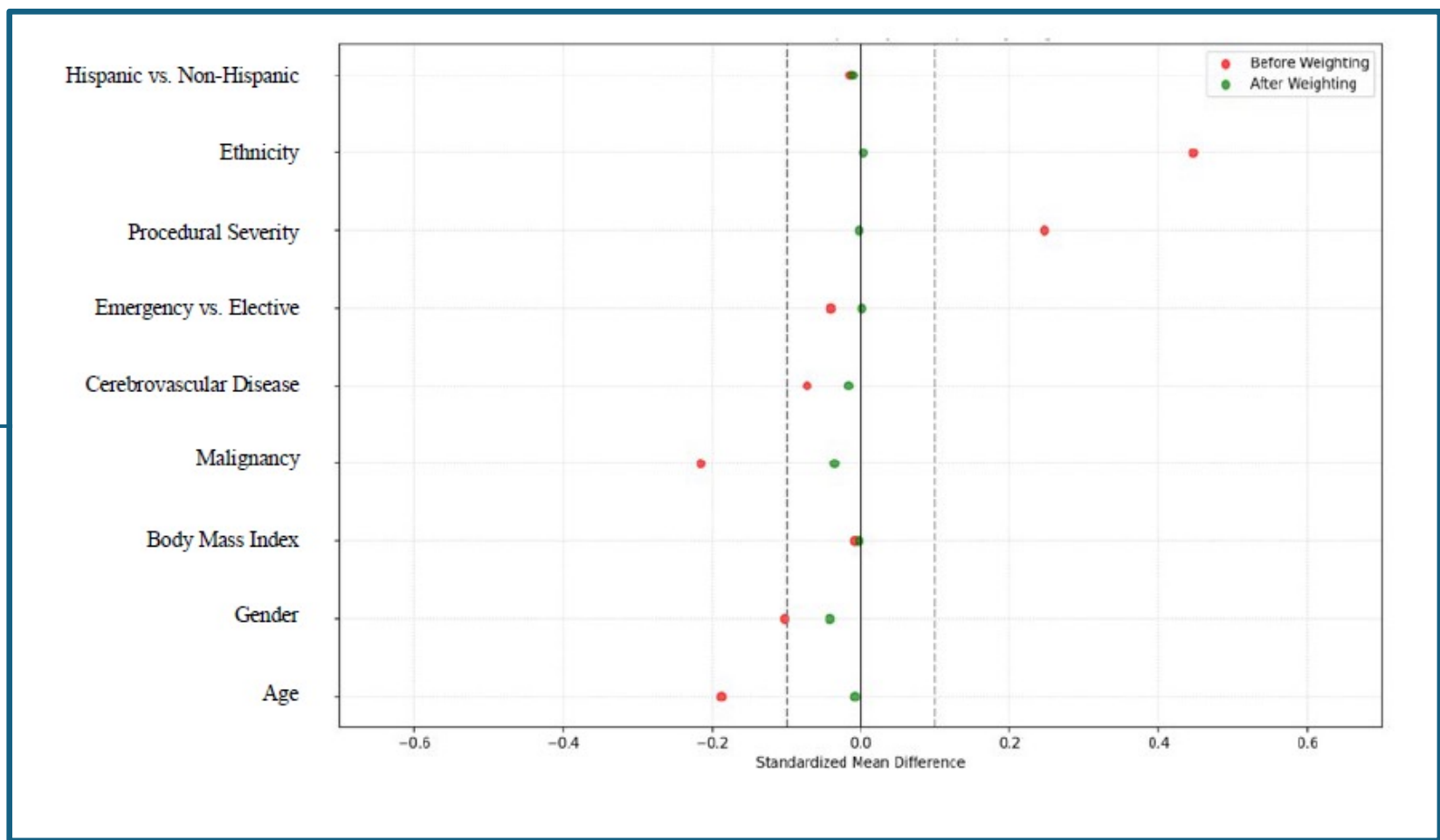


Sub-cohort Analysis

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

- Lower FEV₁, % predicted (80.8 vs. 83.1%)
- Lower DLCO, % predicted (49.6 vs. 62%)
- Higher right ventricular systolic pressure (echo) 16.9 vs. 13.8 mmHg (p<0.001***)
- Presence of sarcoidosis features on chest radiography prior to surgery (<12 months) associated with higher risk for cardiopulmonary complications. (Adj OR: 1.91 (CI:1.1, 3.4) p=0.03)
- Preoperative immunosuppressants: higher pneumonia incidence (8.3 vs. 4.1%, p=0.085)

***by Bonferroni Correction for multiple outcomes

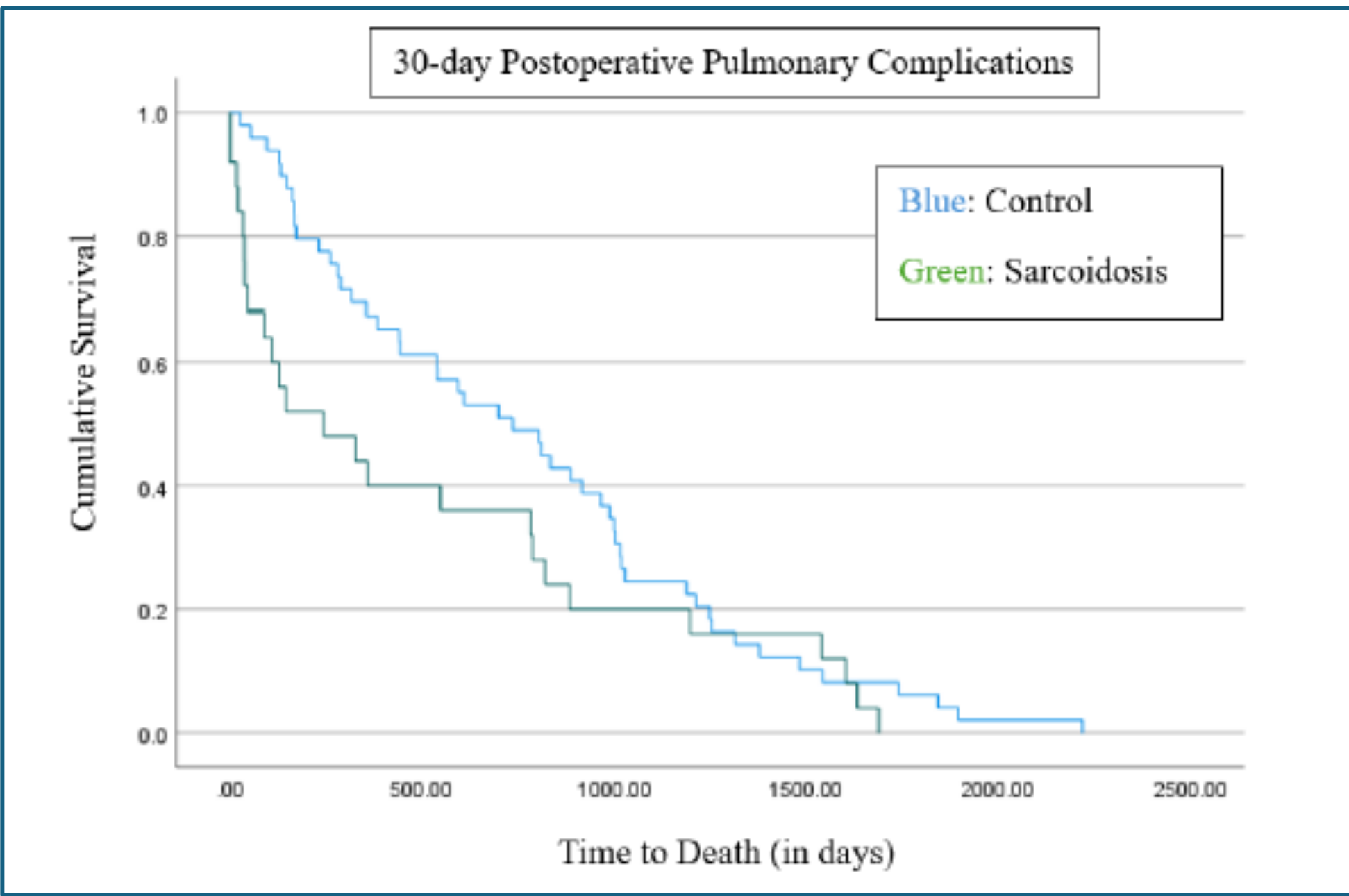


Clinical Implications

- Sarcoidosis diagnosis is an independent risk for PPCs.
- Higher but not significant higher rate of 30-day pneumonia.
- Respiratory Failure/Insufficiency significantly higher, suggesting that cardiac causes may contribute more than anticipated (postoperative fluid overload).
- Significantly higher risk for both cardiac and pulmonary complications in patients with elevated right ventricular systolic pressure.
- Length of stay was higher and survival lower in patients with PPC, when compared to controls. This suggests higher severity when PPCs occurred.
- Scadding stage was not helpful in predicting postoperative pulmonary complications.
- Preoperative chest radiography may be indicated to assist in risk stratifying patients prior to surgery. (Adjusted OR: 1.91, p=0.03).

Survival after PPC

- Overall survival after surgery is lower but unclear if this is simply disease effect.
- However, after PPC, length of stay was higher and survival was lower, when compared to controls. Right-skew Kaplan-Meier suggests procedural effect.



Conclusions

Sarcoidosis constitutes a higher risk for 30-day PPC, and preoperative risk stratification may benefit from standard chest radiography to identify higher-risk patients.

References

- Baughman et al. Sarcoidosis in America: Analysis Based on Health Care Use. (2016)
- Parikh et al. Clinical features and outcomes of patients with sarcoidosis associated pulmonary hypertension. (2018)
- Baughman et al. ERS clinical practice guidelines on treatment of sarcoidosis. (2021)