

Pulmonary Vascular Disease

SESSION TITLE: Pulmonary Vascular Disease Scientific Abstract Posters (C): PAH

SESSION TYPE: Original Investigation Posters

PRESENTED ON: 10/20/2026 01:45 pm - 02:30 pm

IMPACT OF SECONDARY PULMONARY HYPERTENSION ON IN-HOSPITAL MORTALITY AND LENGTH OF STAY AMONG PATIENTS WITH SARCOIDOSIS

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PURPOSE: Sarcoidosis is a multisystem granulomatous disease that commonly involves the lungs and may be complicated by pulmonary hypertension (PH), a condition associated with increased morbidity and mortality. However, data evaluating the impact of secondary PH on in-hospital mortality among patients remains limited. Understanding its association with mortality and hospital length of stay (LOS) may improve risk stratification in the high-risk population.

METHODS: We conducted a retrospective cross-sectional study using the National Inpatient Sample (NIS). Adult patients hospitalized with a diagnosis of sarcoidosis (ICD-10 code D86) were included. Secondary pulmonary hypertension was identified across all available diagnosis fields (ICD-10 code I27.2). The primary outcomes were in-hospital mortality and hospital length of stay. LOS was analyzed as a continuous variable and log-transformed ($\ln[\text{LOS}+1]$) to address skewness. Multivariable logistic regression was performed to evaluate the independent association between secondary PH and in-hospital mortality, and multivariable linear regression was used to assess the association between secondary PH and log-transformed LOS. Both models were adjusted for age, sex, race, acute respiratory failure, pulmonary fibrosis, pulmonary embolism, heart failure, and pneumonia. Adjusted odds ratios (ORs) and beta coefficients with 95% confidence intervals (CIs) were reported. Statistical significance was defined as a two-sided p-value <0.05 .

RESULTS: A total of 41,327 hospitalizations with sarcoidosis were identified. Secondary pulmonary hypertension was present in 20.1% of cases. Overall, in-hospital mortality was 4.2%. In unadjusted analysis, patients with secondary PH had higher in-hospital mortality compared with those without PH (5.1% vs. 4.0%, $p<0.001$). In multivariable logistic regression analysis, secondary PH remained independently associated with increased odds of in-hospital mortality (OR 1.15, 95% CI 1.02-1.30, $p=0.027$) after adjusting for demographics and cardiopulmonary comorbidities. In multivariable linear regression analysis, secondary PH was independently associated with longer hospital length of stay. After log transformation of LOS, secondary PH was associated with an approximate 10% increase in LOS. ($\beta=0.096$, $p<0.001$). Acute respiratory failure was the strongest predictor of mortality (OR 4.37, $p<0.001$) and was also associated with prolonged LOS. Pulmonary embolism was independently associated with increased mortality (OR 1.43, $p=0.003$).

CONCLUSIONS: Secondary pulmonary hypertension is common among patients hospitalized with sarcoidosis and is independently associated with increased in-hospital mortality and longer hospital length of stay. These findings identify secondary PH as a higher-risk subgroup among hospitalized patients with sarcoidosis, even after adjustment for cardiopulmonary comorbidities.

CLINICAL IMPLICATIONS: Recognition of secondary pulmonary hypertension in hospitalized patients with sarcoidosis may support early risk stratification and closer hemodynamic and respiratory monitoring. Identifying this high-risk population could help anticipate resource use and potentially improve inpatient outcomes through targeted clinical interventions.

DOI: <https://doi.org/10.1016/j.chest.2026.07.4563>

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