Chronic Obstructive Pulmonary Lung Disease Incidence and Outcomes in Psoriasis Patients

Lily Guo BS[1], Sara N. Bilimoria MD[2], Robin Kikuchi BS[3], Audrey Hao BS[3], Kaviyon Sadrolashrafi BS[4], Rebecca K. Yamamoto BS BA[5], Hannah Tolson BS[6], Danielle Yee MD[2], April W. Armstrong MD MPH[2]

[1] Duke University School of Medicine, Durham, NC
[2] Division of Dermatology, Department of Medicine, David Geffen School of Medicine at the University of California, Los Angeles, Los Angeles, CA
[3] Keck School of Medicine of University of Southern California, Los Angeles, CA
[4] Kirk Kerkorian School of Medicine at UNLV, Las Vegas, NV
[5] Georgetown University School of Medicine, Washington, DC
[6] University of Arizona College of Medicine, Phoenix, AZ

Background: Psoriasis is an autoimmune skin disease associated with inflammatory pulmonary diseases. However, it is unclear whether psoriasis patients are at increased risk for chronic obstructive pulmonary disease (COPD). In addition, the relationship between psoriasis and COPD outcomes is not well characterized. In this study, we evaluated whether COPD patients with psoriasis are at higher risk of developing COPD as well as COPD-associated complications, including mortality, than those without psoriasis.

Methods: We conducted a retrospective cohort study using Optum's Clinformatics Data Mart (CDM) data (2007-2023) to assess (1) the incidence of COPD in psoriasis patients and (2) the risk of COPD-associated complications and mortality in psoriasis patients.

Results: To evaluate the incidence of COPD in psoriasis patients, we identified 481,076 patients with psoriasis and 43,624,233 psoriasis-free controls. In addition, to evaluate COPD outcomes in psoriasis patients, we identified 61,444 adults with COPD and psoriasis and 2,740,302 adults with COPD and without psoriasis. The COPD incidence was 10.74 per 1000 person-years in psoriasis patients and 6.36 per 1000 person-years in psoriasis-free patients. On multivariate Cox regression, the effect of psoriasis varied based on the acuity of complications. For acute complications, COPD patients with psoriasis were at 1.80 risk of developing acute COPD exacerbations compared to those without psoriasis (95% CI [1.77 - 1.84], $p<0.001$). For chronic complications, COPD patients with psoriasis were at lower risk of developing pulmonary hypertension (HR 0.96, 95% CI [0.94-0.99], $p<0.001$), respiratory failure (HR 0.9, 95% CI [0.89, 0.93], $p < 0.001$), and mortality (HR 0.81, 95% CI [0.80, 0.83], $p<0.001$) compared to their psoriasis-free counterparts.

Conclusions: Our findings suggest that psoriasis differentially affects COPD outcomes depending on complication acuity. Possible explanations include shared pro-inflammatory pathways and differences in healthcare utilization.