

Lower mortality associated with adjuvant corticosteroid therapy in non-HIV infected patients with pneumocystis jirovecii pneumonia: a single US cohort study and a proposed novel mechanism of corticosteroid benefit

W Mundo, (MD., SOM), S. Tewahade, E. Wagner, S. Archuleta, M. Bandali, S. Chadalawada, SC, Johnson, C Franco-Paredes, L Shapiro, AF Henao-Martínez, Department of Medicine, Division of Infectious Diseases, University of Colorado Anschutz Medical Campus

Pneumocystis jirovecii pneumonia (PJP) remains a cause of mortality in HIV-negative patients. The clinical benefit of adjuvant corticosteroids therapy in these patients is uncertain. This study aimed to determine if corticosteroids reduced mortality in a cohort of HIV-negative PJP patients, and to propose a novel mechanism explaining corticosteroid benefit in patients regardless of HIV status. We examined a retrospective case series of patients diagnosed with PJP at the University of Colorado Hospital between 1995-2019. Data were collected in 71 PJP-infected patients. Twenty-eight patients were HIV-negative, and 43 were infected with HIV (HIV-positive). We performed bivariate and forward, stepwise multivariable logistic regressions to identify predictors of mortality. Underlying conditions in HIV-negative patients were hematologic malignancies (28.6%), autoimmune disorders (25.9%), or solid organ transplantation (10.7%). Compared to HIV-positive patients, HIV-negative patients had higher rates and duration of mechanical ventilation and ICU stay. Survival was significantly increased in HIV-negative patients receiving adjunct corticosteroids, with 100% mortality in patients not receiving corticosteroids vs 60% mortality in patients receiving corticosteroids ( $p=0.034$ ). In an adjusted multivariable model, corticosteroids were associated with lower mortality (OR 13.5, 95% CI: 1.1-158.5,  $p=0.039$ ) regardless of HIV status. We found substantial mortality among HIV-negative patients with PJP and adjunct corticosteroid use was associated with decreased mortality. Adjunct corticosteroid mortality-lowering effect is best explained by suppressing pneumocystis lysis. This reduces surfactant disruption resulting from pneumocystis internal substances.