FPIN's Clinical Inquiries

Corticosteroids for Presumed Pneumocystis Pneumonia in Patients with HIV Infection

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Clinical Question

Should empiric corticosteroids be prescribed for immunosuppressed patients with human immunodeficiency virus (HIV) infection who have presumed pneumocystis pneumonia?

Evidence-Based Answer

Adjunctive corticosteroids decrease mortality in patients with HIV infection who have moderate to severe hypoxemia and suspected or confirmed pneumocystis pneumonia. Corticosteroids lead to a higher incidence of herpetic lesions, but not other opportunistic conditions. (Strength of Recommendation: A, based on a systematic review of randomized controlled trials [RCTs].)

Evidence Summary

A Cochrane meta-analysis of six RCTs (n = 489) found that corticosteroids given as early adjunctive anti–pneumocystis pneumonia therapy in patients with HIV infection decrease mortality at one month (risk ratio [RR] = 0.56; 95% confidence interval [CI], 0.32 to 0.98) and at three to four months (RR = 0.68; 95% CI, 0.5 to 0.94).[1] Of the 489 patients, 463 had confirmed pneumocystis pneumonia, and all but 41 received corticosteroids within 72 hours of starting anti–pneumocystis pneumonia therapy. When highly active antiretroviral therapy is available, the estimated number needed to treat (NNT) is 23 (95% CI, 15 to 500), based on a 10% assumed mortality rate for patients with pneumocystis pneumonia who receive antiretroviral therapy but no corticosteroids. Two RCTs found no survival benefit; one did not provide corticosteroids within 72 hours of anti–pneumocystis pneumonia therapy, and the other was halted early because of clear benefit of adjunctive corticosteroid therapy.[1]

The largest RCT, which included 251 adults with HIV infection and pneumocystis pneumonia, analyzed patients according to hypoxemia ratios (i.e., partial pressure of arterial oxygen divided by the fraction of inspired oxygen).[2] Investigators defined mild hypoxemia as a ratio of 350 or greater, moderate hypoxemia as 250 to 349, and severe hypoxemia as 76 to 249. Patients received either oral prednisone (40 mg twice daily for five days, then 40 mg daily for five days, then 20 mg daily for 10 days) or intravenous methylprednisolone. The use of corticosteroids decreased the incidence of respiratory failure in patients with moderate hypoxemia (RR = 2.7; 95% CI, 1.3 to 5.6; $P = .01$; NNT = 5.3) and severe hypoxemia (RR = 1.9; 95% CI, 1.0 to 3.6; $P = .05$; NNT = 4.5), but not in those with mild hypoxemia.[2] Patients receiving corticosteroids were more likely to develop herpetic lesions than those who did not (26% vs. 15%; $P < .04$; number needed to harm = 9; 95% CI, 4.7 to 78.7). The rate of oral thrush was similar in both groups (53% vs. 41%; $P < .1$). There were no other significant increases in opportunistic conditions or adverse effects in patients receiving corticosteroids.

Recommendations from Others

Guidelines from the Centers for Disease Control and Prevention, National Institutes of Health, and Infectious Diseases Society of America recommend prescribing adjunctive corticosteroids for patients with HIV infection and suspected pneumocystis pneumonia

with moderate or severe hypoxemia (arterial partial pressure of oxygen less than 70 mm Hg or arterial-alveolar oxygen gradient greater than 35 mm Hg).[1,3] They recommend that adjunctive corticosteroids be given within 72 hours of initiating anti–pneumocystis pneumonia therapy, but there is insufficient evidence for initiating corticosteroid therapy after that time, even if respiratory deterioration ensues.[3,4]

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