Comment on "Incidence of pneumocystosis among patients exposed to immunosuppression"

To the Editor: We read Rekhtman et al's recent study "Incidence of pneumocystosis among patients exposed to immunosuppression" with great interest.[1] The study provides an exceptional insight into the incidence of pneumocystis pneumonia (PCP) in patients receiving iatrogenic immunosuppression. Given the high mortality of PCP, concerns are certainly warranted. However, the recommendation to utilize prophylaxis must be based on evidence, whereby the incidence of PCP in the population is considered, as well as the number needed to prevent and number needed to harm. The authors make the assertion that PCP prophylaxis is warranted for patients receiving combination immunosuppressant and corticosteroid therapy, as this had the highest incidence of PCP in their analysis. Their study, however, appears to support the opposite claim. In their study, they identify the incidence of PCP in these dually immunosuppressed patients as 0.199% over a course of 5 years, or 199 persons/100,000 patient-years.

An incidence of 3.5% was previously suggested as an evidenced-based cutoff for determining the utility of prophylaxis.[2] The authors determined this cutoff in a systematic review using data from 12 randomized controlled trials of bone marrow transplant recipients and hematologic cancer patients by weighing the number needed to prevent 1 case of PCP versus the number needed to cause severe adverse events. In this study, 3.1% of adults experienced adverse events that required cessation of prophylaxis. In total, the number needed to harm was 32.

Given the incidence in Rekhtman et al's study of 0.199% and assuming 100% efficiency of PCP prophylaxis in these dually immunosuppressed patients, the number needed to treat would be 502. Clearly, when presented in this manner, it becomes evident that routine prophylaxis is not supported by the presented evidence. For every 1 case of PCP prevented, 16 patients would be harmed. Of course, the severity of adverse events requiring cessation of prophylaxis and the mortality of PCP must also be weighed, but this becomes more patient population dependent.

Although the risk of PCP prophylaxis in the dermatologic population relative to the bone marrow transplant and cancer population is unknown, the number need to harm must still approach 505 to justify prophylaxis. In a study of patients with rheumatic diseases, the number needed to harm was 132.[3]

In light of the data presented by Rekhtman et al, we believe the opposite conclusion can be made: routine pneumocystis prophylaxis is not warranted. An incidence of 0.199% over a course of 5 years must carefully be weighed against the number needed to harm. Utilization in patients with known risk factors for PCP, including lymphopenia, underlying pulmonary disease, hematologic malignancy, primary immunodeficiency, or low albumin is of course a separate entity, which must be considered on a case-by-case basis.[4] However, Rekhtman et al's impressive study provides evidenced-based data to refute the need for routine PCP prophylaxis.

Eric H. Kowalski, BS,[a] Diana Kneiber, BS,[a] Khalaf Kridin, MD, PhD,[b] and Kyle T. Amber, MD[a]

From the Department of Dermatology, University of Illinois at Chicago, Chicago, Illinois[a]; and Department of Dermatology, Rambam Healthcare Campus, Haifa, Israel[b]

Funding sources: None.

Conflicts of interest: None disclosed.

Correspondence to: Kyle T. Amber, MD, Department of Dermatology, University of Illinois at Chicago, 808 S Wood St, RM377, Chicago, IL 60612

E-mail: ktamber@uic.edu

REFERENCES

1. Rekhtman S, Strunk A, Garg A. Incidence of pneumocystosis among patients exposed to immunosuppression. *J Am Acad Dermatol*. 2019.
2. Green H, Paul M, Vidal L, Leibovici L. Prophylaxis of pneumocystis pneumonia in immunocompromised non-HIV-infected patients: systematic review and meta-analysis of randomized controlled trials. *Mayo Clin Proc*. 2007;82:1052-1059.
3. Park JW, Curtis JR, Moon J, Song YW, Kim S, Lee EB. Prophylactic effect of trimethoprim-sulfamethoxazole for pneumocystis pneumonia in patients with rheumatic diseases exposed to prolonged high-dose glucocorticoids. *Ann Rheum Dis*. 2018;77:644-649.
4. Liu Y, Su L, Jiang S-J, Qu H. Risk factors for mortality from pneumocystis carinii pneumonia (PCP) in non-HIV patients: a meta-analysis. *Oncotarget*. 2017;35:59729-59739.

https://doi.org/10.1016/j.jaad.2019.02.071