Sputum Conversion among Patients with New Smear Positive Pulmonary Tuberculosis at Interval of 2nd, 4th, and 8th week

Patcharat Chiamruchikun¹ Kunchit Piyavechvirar²

¹Department of Internal Medicine, Phramongkutklao Hospital, Bangkok 10400, Thailand, ²Division of Pulmonary and Critical care Medicine, Department of Internal Medicine, Phramongkutklao Hospital, Bangkok 10400, Thailand

Background: Tuberculosis is an airborne disease. Sputum smear-positive pulmonary tuberculosis patients expel infectious viable bacilli for a period following the commencement of treatment. The World Health Organization (WHO) and The US Centers for Disease Control and Prevention (CDC) recommend the suspension of respiratory isolation only when correct treatment leads to clinical improvement, followed by three consecutive negative sputum smears.

Objective: To determine the sputum conversion rate at 2 weeks, 4 weeks, and 8 weeks in patients with smear positive pulmonary tuberculosis and influencing factors.

Methods: This prospective cohort study of 58 sputum smear positive patients was conducted in tuberculosis clinic of Phramongkutklao Hospital between November 2016 and December 2017. At each follow up, sputum specimens were collected for AFB smear and culture at 2 weeks, 4 weeks, and 8 weeks using standard protocol after starting treatment.

Results: Patients had positive smears for a mean of 35.5 days. Sputum conversion rate was 22.41% after 2 weeks, with 50% after 4 weeks and 74.14% after 8 weeks. Univariate and stepwise regression analysis showed 3+ AFB smear at initial treatment (OR = 11.4, 95%CI 2.835-45.841, P = 0.001) and drug resistance (OR = 5.067, 95%CI 1.26-20.374, P = 0.022) were factors independently associated with the delayed sputum conversion.

Conclusion: Since viable bacilli continue to be expelled for up to eight weeks, infection control measures should be maintained during such a time. Patients with high smear grading and high risk factors for drug resistance need to be monitored more closely.

Keywords: Pulmonary tuberculosis, Sputum conversion, Infection control