Factors Associated with True Infection in Pulmonary Nontuberculous Mycobacterium Infections

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Background This study aimed to determine the clinical significance of nontuberculous mycobacterium (NTM) isolated from respiratory specimens, as well as to identify factors associated with definite or probable infection and colonization.

Methods Medical records of 263 patients who had NTM isolated from respiratory specimens between January 2012 and December 2016 at Srinagarind Hospital, a tertiary care center in Northeastern Thailand, were reviewed.

Results According to ATS/IDSA 2007 criteria, 53 patients were definite/probable pulmonary NTM (36 definite and 17 probable) and 210 were NTM colonization. A total of 12 cases in the definite/probable pulmonary NTM group were noted with disseminated infections and 8 cases had positive interferon gamma (IFNγ) antibody. Anti-HIV was performed in 32 of the definite/probable pulmonary NTM patients, with 2 cases having tested positive.

The common co-morbidities in the definite/probable pulmonary NTM group were old pulmonary tuberculosis and bronchiectasis. On the other hand, cardiovascular disease and diabetes mellitus were common co-morbidities in the colonization group. The most common culture result isolated in the definite/probable pulmonary NTM group was *M. abscessus* (n=21, 39.6%), followed by *M. avium* complex (n=19, 35.8%), *M. fortuitum* (n=3, 5.7%), *M. scrofulaceum* (n=3, 5.7%), rapid growing mycobacterium (n=3, 5.7%), *M.kansasi* (n=2, 3.8%), and *M. gordonae* (n=2, 3.8%).

For the colonization group, the most common isolated organism was *M. avium* complex (n=98, 46.7%), followed by *M. abscessus* (n=30, 14.3%), *M. fortuitum* (n=24, 11.4%), *M. scrofulaceum* (n=14, 6.7%), *M. gordonae* (n=12, 5.7%), and *M. simiae* (n=12, 5.7%).

Patients with age younger than 60 years (Adjusted OR 2.47, 95% CI 1.20-5.10), female sex (Adjusted OR 2.13, 95% CI 1.00-4.55), duration of symptoms more than 28 days (Adjusted OR 3.95, 95% CI 1.91-8.20), bronchiectasis pattern by chest X-ray (Adjusted OR 2.56, 95% CI 1.18-5.53), and *M. abscessus* isolation from culture result (Adjusted OR 3.25, 95% CI 1.50-7.02) were more likely to be definite/probable pulmonary NTM infection than colonization.

Forty-two of 53 patients received treatment at Srinagarind hospital and one-third (38.1%) were cured. All patients with interferon gamma deficiency received ongoing treatment and only one patient with disseminated infections was treated.

Keywords: NTM, nontuberculous mycobacterium, True infection, Pulmonary nontuberculous mycobacterium infection, Respiratory specimens, Pulmonary NTM, Pulmonary nontuberculous mycobacterium, Factor associated with true infection