Adult Pulmonary Medicine ATS Core Curriculum

Samuelk Paul,

Lübeck University, Germany,

Abstract

Despite advances in case finding and treatment, Mycobacterium tuberculosis (Mtb) remains a formidable health threat. In 2012, 8.6 million people became ill with tuberculosis (TB), with 1.3 million deaths making TB second to HIV/AIDS as one of the two major killers worldwide. Individuals with latent TB represent a significant reservoir of TB disease, and key challenges for definitive TB control include the identification of individuals who would benefit from prophylactic therapy for latent TB and the early identification and treatment of those with TB disease. In countries where TB is not endemic, targeted testing for latent TB in populations at high risk of TB exposure is an effective public health intervention. Although there has been a decline in TB in the United States, the Centers for Disease Control and Prevention (CDC) report that foreign-born persons remain disproportionately affected. Specifically, the TB incidence rate in foreign-born persons is 13 times that of the U.S.-born population with California, Texas, New York, and Florida reporting half of the TB cases. Moreover, the risk of TB reactivation among immigrants is thought to be highest in the first 5 years after arrival; however, this risk may be sustained for up to 9 years. Taken together, the CDC recommends additional interventions for the diagnosis and treatment of latent TB in foreign-born persons. A shorter weekly regimen for latent TB with isoniazid and rifapentine is an important advance and may improve the proportion of subjects completing latent TB therapy. In TB-endemic countries, identifying individuals who will have a sustained benefit from prophylactic therapy for latent TB is a greater challenge. At present, the World Health Organization (WHO) supports prophylactic therapy with isoniazid in HIV-positive adults and children unlikely to have TB. In HIV-negative patients, household contact status alone does not predict the cumulative risk of TB exposure and disease, as a significant proportion of TB transmission occurs outside the home. In addition, current diagnostic modalities used for latent TB do not quantify the overall risk of progressing from latent TB to TB in that they do not discern recent from remote infection. Given the difficulty in the individual determination of risk in TB-endemic countries, mass screening and treatment of high-risk occupational cohorts has been studied, but has fallen short in terms of producing a durable effect on TB incidence. Collectively, additional research in biomarkers of TB bacillary burden as well as more durable pharmacologic prophylactic regimens are needed. The broad use of molecular technology and the rapid assessment for drug resistance using nucleic acid amplification testing has greatly enhanced the diagnosis of smear-positive and smear-negative TB. To this end, the International Standards for Tuberculosis Care have been updated and offer guidance on the diagnosis and treatment for drug-susceptible and drug-resistant TB. In less than 2 hours, the Xpert MTB/RIF test amplifies the Mtb DNA of the rpo gene for rifampin resistance and simultaneously discerns TB and potential drug resistance. Since 2010, with the support of the WHO, the Xpert MTB/RIF test has been rolled out in TB-endemic countries as a point of care test to be used in the initial TB workup. In this regard, all patients, including children, with suspected TB should submit two sputum specimens for smear microscopy or a single specimen for the Xpert MTB/RIF test.

Note: This work is partially presented in International Conference On Gastroenterology and Endoscopy | Tokyo, Japan | June 18-19, 2018.