Management of Coinfections in Patients with Human Immunodeficiency Virus

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KEYWORDS

• HBV • HCV • Tuberculosis • Coinfections

KEY POINTS

- Tuberculosis, hepatitis B, and hepatitis C are significant coinfections that are diagnosed in many patients with human immunodeficiency virus (HIV) and that require treatment along with HIV.
- Screening of patients with HIV for these coinfections is important to avoid progression and organ damage from the coinfection.
- Coinfected patients may require additional monitoring during treatment of the coinfection.
- Drug-drug interactions with the patient's antiretroviral regimen must be considered when treating a coinfection.

INTRODUCTION

In the age of effective antiretroviral therapy (ART), the focus and ultimate measure of healthy living with human immunodeficiency virus (HIV) infection is adherence to an effective antiretroviral (ARV) regimen and long-term virologic suppression. However, for many patients, there may be other infections that require treatment. Tuberculosis (TB), hepatitis B, and hepatitis C are significant coinfections that are diagnosed in many patients with HIV. These coinfections often remain subclinical for long periods of time but can be spread to other individuals. In addition, these coinfections can cause organ damage and systemic disease quicker in an HIV-positive patient. Therefore, it is important that clinicians working with patients with HIV appropriately screen for TB, hepatitis B, and hepatitis C and work with their patients for effective treatment when diagnosed. All 3 coinfections can be successfully treated alongside HIV infection with appropriate medication choices, monitoring for adverse effects, and ongoing patient education.

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TUBERCULOSIS STATISTICS

Worldwide prevalence of TB is hard to determine accurately, but the Centers for Disease Control and Prevention (CDC) estimates that approximately one-third of the global population is infected.[1] The World Health Organization (WHO) estimates that 10.4 million new cases occurred worldwide in 2015, including 1.2 million cases of coinfections with HIV.[2] In 2015, there were an estimated 1.4 million deaths caused by TB, and another 400,000 TB-related deaths in persons coinfected with HIV and TB.[2] From 2000 to 2015 there were slight reductions in the worldwide number of deaths caused by TB; the incidence declined slightly (by 1.5%) from 2014 to 2015.[2] However, TB remained in the top 10 causes of death in 2015, outranking HIV.[1] Approximately 11% of persons diagnosed with TB in 2015 were also HIV positive, with the highest proportion of diagnosed coinfections occurring in Africa and southern Africa. Approximately 5% of worldwide TB cases diagnosed in 2015 were determined to be drug resistant.[2]

Although the United States is not a high-burden country per WHO guidelines, TB is still a significant concern there. The CDC reported 9287 new cases in 2016, which translates to a rate of 2.9 cases per 100,000 people. Although the absolute incidence in 2015 increased from previous years, overall population increase has resulted in a generally stable incidence rate over the last 4 years.[3] The last nationwide TB prevalence estimate was obtained via the 2011 to 2012 National Health and Nutrition Examination Survey (NHANES). Through laboratory testing, approximately 5% of this nationwide sample was determined to be positive for TB.[4] Data on drug-resistant TB in the United States are only available for 2015; approximately 1% of cases diagnosed that year were drug resistant.[3]

In addition to considering HIV-positive individuals as a subset of all persons infected with TB, clinicians working with HIV-positive patients should be aware that a significant percentage of the HIV-positive population may be also be infected with TB. In 2015, in 12 WHO high-burden countries, 10% of persons newly enrolled in HIV care were also diagnosed with TB that same year, indicating the significance of TB as an opportunistic infection or coinfection.[2] In the United States, the percentage of persons who are diagnosed annually with both TB and HIV has significantly decreased, from 48.2% in 1993 to 5.5% in 2015.[5] This improvement was likely caused by advances in HIV treatment, but a 5.5% coinfection rate still represents a significant portion of the HIV-positive population.

TUBERCULOSIS SCREENING

The high rate of coinfection with TB in HIV-positive individuals and the increasing risk of progression to active disease highlight the need for appropriate screening in clients who are HIV positive. Current treatment guidelines recommend TB screening at the time of HIV diagnosis regardless of risk factors for TB exposure.[6] Because significant immunosuppression, generally considered a CD4 count less than 200 cells/μL, can cause a false-negative result, retesting is recommended once the individual's CD4 count improves even if the initial TB screening was negative.[6] Continuing with annual TB screening is only recommended if the person has ongoing likely exposure to TB.[6]

Historically, screening for latent TB infection (LTBI) was performed with a tuberculin skin test (TST), which is an intradermal injection of *Mycobacterium tuberculosis* antigens and depends on a cell-mediated immune response to indicate infection with *M tuberculosis*.[7] Drawbacks of the TST include the possibility of mistakes in performing an intradermal injection, the need to return to a health care provider to have the test interpreted, the inherent subjectivity of measuring the induration, and the possibility of