How prevalent is hepatitis B virus (HBV) and latent tuberculosis coinfection in the United States, and are there opportunities to improve testing?

**Background**
Assessing the rate of HBV testing in patients with latent tuberculosis infection (and vice versa) and the prevalence of coinfection is important because HBV increases the risk of drug-induced liver injury during drug treatment for latent tuberculosis infection (LTBI).

**Methods**
Retrospective analysis using laboratory data from 2014 through 2020 to assess (1) testing patterns for chronic HBV infection and LTBI, and (2) HBV-LTBI coinfection.

**Results**

<table>
<thead>
<tr>
<th>Only</th>
<th>LTBI prevalence was</th>
</tr>
</thead>
<tbody>
<tr>
<td>11%</td>
<td>&gt;2x as high in patients with chronic hepatitis B as in those without.</td>
</tr>
<tr>
<td>32%</td>
<td>3x as high in patients with LTBI as in those without.</td>
</tr>
</tbody>
</table>

Testing rates for HBV-LTBI coinfection are low among individuals with chronic hepatitis B and those with LTBI. Among those who were tested, coinfection is substantial, suggesting the need for testing for HBV-LTBI coinfection to mitigate risk of drug-induced liver injury.

Chronic Hepatitis B and Latent Tuberculosis Coinfection in the United States

Article title: Prevalence of Hepatitis B Virus and Latent Tuberculosis Coinfection in the United States

Robert J Wong,a,b Harvey W Kaufman,c Justin K Niles,c William A Meyer III,c Amit S Chitnisd

aStanford University School of Medicine, Stanford, CA USA; bVeterans Affairs Palo Alto Healthcare System, Palo Alto, CA USA; cQuest Diagnostics, Secaucus, NJ USA; dAlameda County Public Health Department, San Leandro, CA USA


Background

- Patients with latent tuberculosis infection (LTBI) have increased risk for drug-induced liver injury during treatment if they also have chronic hepatitis B.1
- The package insert of the primary anti-tuberculosis drug, isoniazid, warns about potential severe and sometimes fatal hepatitis and recommends monitoring aspartate aminotransferase (AST) and alanine aminotransferase (ALT) during therapy.2
- The frequency of testing for both LTBI and hepatitis B and the prevalence of coinfection are not well understood.
- **Objective:** This study used a national clinical laboratory database to examine patterns of hepatitis B and LTBI testing and the prevalence of hepatitis B virus (HBV)-LTBI coinfection.

Methods

- The investigators retrospectively analyzed deidentified test results in the Quest Diagnostics database for testing carried out from 2016 through 2020.
  - Chronic hepatitis B was indicated by 2 positive results ≥6 months apart for any combination of hepatitis B surface antigen test, hepatitis B e antigen test, or HBV DNA test.
  - LTBI was indicated by a positive QuantiFERON® or T-SPOT® test, absent laboratory evidence of active TB infection.
- The volumes of HBV and LTBI testing and prevalence of chronic HBV infection, LTBI, and HBV-LTBI coinfection were assessed; results were stratified by sex, age, race/ethnicity, and US geographic region.

Results

- Laboratory testing for HBV was conducted for 17,635,261 individuals. The overall prevalence of chronic hepatitis B in this group was 0.51% (95% CI, 0.50-0.51).
- Laboratory testing for LTBI was conducted for 5,205,393 individuals. The overall prevalence of LTBI in this group was 7.6% (95% CI, 7.6-7.8).
- Among 89,259 individuals with chronic hepatitis B, 9,508 (10.7%) were tested for LTBI.
  - LTBI prevalence was >2 times as high in individuals with chronic hepatitis B as in those without (19.6% vs 7.3%; *P*<.01).
  - LTBI coinfection was most prevalent among those aged >70 years (29.5%) and Asian American individuals (22.8%).
- Among the 394,817 individuals with LTBI, 127,414 (32.3%) were tested for HBV.
  - Chronic hepatitis B prevalence was 3 times as high in individuals with LTBI as in those without (1.5% vs 0.5%; *P*<.01).
  - HBV-LTBI coinfection was more prevalent in men (1.9%) than women (1.2%) and was most prevalent among those aged 50 to 69 years (1.8%), Asian American individuals (2.7%), and in regions of California and southern Nevada.

Conclusions

- The prevalence of HBV-LTBI coinfection in this study was substantial, despite likely underestimation due to suboptimal testing
- These findings reveal an opportunity to reduce the risk of drug-induced liver injury among patients with both LTBI and chronic HBV to improve clinical outcomes.
- Identification of HBV infection in patients with LTBI may be useful in selecting therapies that minimize liver toxicity.

References