Search strategy

The search terms comprising combinations of different Medical Subject Headings (MeSH) terms were applied for the three English databases (PubMed, EMBASE and Cochrane Library). The details are shown as follows:

Pubmed
#1: (Hepatitis B[MeSH]) OR (Hepatitis B, Chronic [MeSH]) OR (Hepatitis B virus [MeSH]) OR (Hepatitis B Antigens [MeSH]);
#2: (Hepatitis B[Title/Abstract]) OR (HBV[Title/Abstract]) OR (B virus, Hepatitis[Title/Abstract]) OR (Dane Particle[Title/Abstract]) OR (Particle, Dane[Title/Abstract]) OR (type b hepatitis [Title/Abstract]) OR (HBAg[Title/Abstract]) OR (B Antigens, Hepatitis[Title/Abstract]);
#3: #1 OR #2;
#4: (Fatty Liver [MeSH]) OR (Non-alcoholic Fatty Liver Disease [MeSH]);
#5: (steatohepat*[Title/Abstract]) OR (Steatosis [Title/Abstract]) OR (Steatoses [Title/Abstract]);
#6: (Non alcoholic Fatty Liver Disease [Title/Abstract]) OR (NAFL*[Title/Abstract]) OR (NASH[Title/Abstract]) OR (Liver [Title/Abstract] AND (fatty [Title/Abstract]) OR steato*[Title/Abstract]));
#7: #4 OR #5 OR #6;
#8: #3 AND #7.
Result: 2168

Embase
#1: 'hepatitis b'/exp;
#2: 'chronic hepatitis b'/exp;
#3: 'hepatitis b virus'/exp;
#4: 'hepatitis b antigen'/exp;
#5: #1 OR #2 OR #3 OR #4;
#6: 'hbv': ab,ti,
#7: 'hepatitis b': ab,ti;
#8: 'b virus, hepatitis': ab,ti;
#9: 'dane particle': ab,ti;
#10: 'type b hepatitis': ab,ti;
#11: 'hhag': ab,ti;
#12: 'b antigens, hepatitis': ab,ti;
#13: #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12;
#14: #5 OR #13;
#15: 'fatty liver'/exp;
#16: 'nonalcoholic fatty liver'/exp;
#17: steatohepat*: ab,ti;
#18: 'steatosis': ab,ti;
#19: 'steatoses': ab,ti;
#20: 'non alcoholic fatty liver disease': ab,ti;
#21: 'nafl*': ab,ti;
#22: 'nash': ab,ti;
#23: 'fatty': ab,ti;
#24: 'steato*': ab,ti;
#25: #23 OR #24;
#26: 'liver': ab,ti;
#27: #25 AND #26;
#28: #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #22 OR #27;
#29: #14 AND #28.
Result: 7118

Cochrane
#1: MeSH descriptor: [Hepatitis B] explode all trees
#2: MeSH descriptor: [Hepatitis B Antigens] explode all trees
#3: MeSH descriptor: [Hepatitis B virus] explode all trees
#4: #1 or #2 or #3
#5: (HBV): ti,ab,kw
#6: (hepatitis b): ti,ab,kw
#7: (B virus, Hepatitis): ti,ab,kw
#8: (Dane Particle): ti,ab,kw
#9: (type b hepatitis): ti,ab,kw
#10: (HBAg):ti,ab,kw
#11: (B Antigens, Hepatitis): ti,ab,kw
#12: #5 or #6 or #7 or #8 or #9 or #10 or #11
#13: #4 or #12
#14: MeSH descriptor: [Fatty Liver] explode all trees
#15: MeSH descriptor: [Non-alcoholic Fatty Liver Disease] explode all trees
#16: (steatohepat*): ti,ab,kw
#17: (steatosis): ti,ab,kw
#18: (steatoses): ti,ab,kw
#19: (non alcoholic fatty liver disease): ti,ab,kw
#20: (nafl*): ti,ab,kw
#21: (nash): ti,ab,kw
#22: (fatty): ti,ab,kw
#23: (steato*): ti,ab,kw
#24: #22 OR #23
#25: (liver): ti,ab,kw
#26: #24 AND #25
#27: #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #26
#28: #27 AND #13
Result: 225
Figure S1 Funnel plots of the HS prevalence in CHB patients were used to assess publication bias
Figure S2 Sensitivity analysis of omitting each study on the overall pooled estimate of the prevalence of HS in CHB patients
### Table S1: Diagnostic criteria of HS in CHB patients

<table>
<thead>
<tr>
<th>Defined as HS</th>
<th>Studies</th>
<th>Pool prevalence (%) [estimate (95%CI)]</th>
<th>I²</th>
<th>P value between groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liver biopsy (affected hepatocytes)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;5%</td>
<td>40</td>
<td>35.81 (31.13–40.63)</td>
<td>97.30%</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>&gt;10%</td>
<td>3</td>
<td>20.35 (17.64–23.20)</td>
<td>0.00%</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>9</td>
<td>32.56 (21.50–44.66)</td>
<td>95.60%</td>
<td></td>
</tr>
<tr>
<td>CAP score</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥248 dB/m</td>
<td>5</td>
<td>43.50 (38.33–48.73)</td>
<td>91.30%</td>
<td>0.0549</td>
</tr>
<tr>
<td>≥238 dB/m</td>
<td>3</td>
<td>57.27 (45.49–68.64)</td>
<td>95.10%</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>4</td>
<td>50.44 (44.41–56.46)</td>
<td>91.20%</td>
<td></td>
</tr>
</tbody>
</table>

Interpretation of the diagnostic criteria of HS in CHB patients: (I) Liver biopsy: liver biopsy is the gold standard diagnostic method as well as the most commonly used method for HS diagnosis in the studies (57/90). The prevalence of HS in CHB was also stratified by diagnostic criteria for HS using liver biopsy. HS defined as 10% or more of hepatocytes affected had a lower prevalence rate of HS in CHB patients (20.35%; 95% CI: 17.64–23.20%) than that of HS defined as 5% or more (35.81%; 95% CI: 31.13–40.63%; Table S1). Furthermore, HS defined as 5% or more of hepatocytes affected was the dominant diagnostic criteria (40/52) for HS using liver biopsy. (II) Controlled attenuation parameter (CAP) score: The lower limit of the CAP score to determine HS in CHB patients was slightly heterogeneous (220–248 dB/m). The subgroup analysis showed that HS defined as CAP ≥248 dB/m (43.50%; 95% CI: 38.33–48.73%) had a lower prevalence rate of HS in CHB patients than that of HS defined as CAP ≥238 dB/m (57.27%; 95% CI: 45.49–68.64%; Table S1). However, due to the limited subgroup studies reporting CAP scores, we cannot draw a straightforward conclusion to determine the heterogeneity associated with the diagnostic CAP score. (III) Abdominal ultrasonography: HS was assessed using criteria including the presence of liver and kidney echo discrepancy, with or without the presence of posterior attenuation of ultrasound beam, vessel blurring, difficult visualization of the gallbladder wall, and difficult visualization of the diaphragm. CAP, central attenuation parameter; HS, hepatic steatosis.
### Table S3  Relationship between HBV viral load and HS in CHB patients

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Studies</th>
<th>Pooled OR or WMD [estimate (95%CI)]</th>
<th>I²</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNA &gt;1,000 copies/mL</td>
<td>3</td>
<td>0.57* [0.31–1.03]</td>
<td>77.70%</td>
<td>0.0636</td>
</tr>
<tr>
<td>DNA &gt;5,000 copies/mL</td>
<td>3</td>
<td>0.88* [0.61–1.27]</td>
<td>40.70%</td>
<td>0.1851</td>
</tr>
<tr>
<td>DNA (lg IU/mL)</td>
<td>14</td>
<td>−0.35 [−0.89–0.19]</td>
<td>97.60%</td>
<td>0.2096</td>
</tr>
</tbody>
</table>

*OR, odds ratio; WMD, weighted mean difference.

### Table S4  The influence of the diagnostic mode of HS on the outcomes

<table>
<thead>
<tr>
<th>Defined as hepatic steatosis</th>
<th>Studies</th>
<th>Pooled OR [estimate (95% CI)]</th>
<th>I²</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cirrhosis</td>
<td></td>
<td></td>
<td></td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Liver biopsy (affected hepatocytes) &gt; 5%</td>
<td>10</td>
<td>OR 1.17 (0.74–1.86)</td>
<td>72.80%</td>
<td></td>
</tr>
<tr>
<td>Liver biopsy (affected hepatocytes) &gt; 0%</td>
<td>1</td>
<td>OR 5.00 (0.23–107.28)</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>CAP &gt;238 dB/m</td>
<td>1</td>
<td>OR 1.35 (0.14–13.13)</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Unclear</td>
<td>3</td>
<td>OR 0.77 (0.37–1.59)</td>
<td>0.00%</td>
<td></td>
</tr>
<tr>
<td>Fibrosis score 2–4</td>
<td></td>
<td></td>
<td></td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Liver biopsy (affected hepatocytes) &gt;5%</td>
<td>11</td>
<td>OR 0.75 (0.49–1.14)</td>
<td>87.80%</td>
<td></td>
</tr>
<tr>
<td>Liver biopsy (affected hepatocytes) &gt;0%</td>
<td>2</td>
<td>OR 1.04 (0.61–1.77)</td>
<td>0.00%</td>
<td></td>
</tr>
<tr>
<td>CAP &gt;238 dB/m</td>
<td>1</td>
<td>OR 0.78 (0.51–1.19)</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Unclear</td>
<td>3</td>
<td>OR 0.35 (0.03–4.29)</td>
<td>97.50%</td>
<td></td>
</tr>
</tbody>
</table>

OR, odds ratio; CAP, central attenuation parameter.
References


