**Application of LIVERFASt to Predict Steatosis in Chronic Hepatitis B Patients with Metabolic Syndrome**

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**INTRODUCTION**

- Chronic hepatitis B (CHB) and non-alcoholic fatty liver disease (NAFLD) are both common liver conditions
- 30 - 40% of CHB patients also have NAFLD which are associated with high prevalence of type 2 diabetes and metabolic syndrome
- Patients with both CHB and NAFLD have increased risk of advanced hepatic fibrosis and hepatocellular carcinoma
- It is important to identify CHB patients who have co-existing NAFLD without a liver biopsy

**AIMS**

- To evaluate the prognostic values of LIVERFASt as a noninvasive biomarker in detecting hepatic steatosis in chronic hepatitis B
- To correlate LIVERFASt steatosis with Fibroscan Controlled Attenuation Parameter (CAP) scores

**METHOD**

- Retrospective study in a single tertiary Liver Center
- Based on the availability of fasting sera, we identified 2 groups: Chronic hepatitis B with metabolic syndrome (MS-HBV) Chronic hepatitis B alone as controls (C-HBV)
- LIVERFASt™ scores were computed for each sample
- Medical record review was performed to record demographics, clinical and HBV status of patients

**RESULT**

**Demographics and clinical characteristics**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>MS-HBV N=36</th>
<th>MS-HBV N=36</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>50 (24-72)</td>
<td>46 (25-63)</td>
<td>0.17</td>
</tr>
<tr>
<td>Gender (M:F)</td>
<td>24:12</td>
<td>22:24</td>
<td>0.08</td>
</tr>
<tr>
<td>Asian (%)</td>
<td>30 (83%)</td>
<td>31 (67%)</td>
<td>0.1</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>28 (23-37)</td>
<td>25 (16-35)</td>
<td>0.001</td>
</tr>
<tr>
<td>ALT (U/L)</td>
<td>42 (14-155)</td>
<td>27 (4-92)</td>
<td>0.002</td>
</tr>
<tr>
<td>AST (U/L)</td>
<td>30 (18-54)</td>
<td>25 (10-60)</td>
<td>0.01</td>
</tr>
<tr>
<td>HbA1c (%)</td>
<td>6.1 (5.1-8.4)</td>
<td>5.2 (4.1-5.8)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>HBV DNA &gt;2000IU/ml n(%)</td>
<td>5 (14%)</td>
<td>7 (15%)</td>
<td>NS</td>
</tr>
<tr>
<td>HBV antiviral n(%)</td>
<td>15 (42%)</td>
<td>17 (37%)</td>
<td>NS</td>
</tr>
</tbody>
</table>

**Correlation between LIVERFASt Steatosis scores and clinical parameters**

- Steatosis score vs BMI: r = 0.577; p<0.0001
- Steatosis score vs HbA1c %: r = 0.319; 0.0035
- Steatosis score vs Fibrosis score*: r = 0.058; 0.80

* Only 4 (11%) and 2 (4%) of MS-HBV and C-HBV had Fibrosis ≥ F2, respectively. All the patients in this cohort had A0 Activity score

**Linear regression model of LIVERFASt Steatosis scores and BMI**

- \( r = 0.577 \)  \( p = 0.0001 \)

**CONCLUSIONS**

- LIVERFASt has prognostic values in detecting steatosis among CHB patients with metabolic syndrome
- There are significant correlations between the LIVERFASt steatosis score with BMI and CAP score (Fibroscan)
- These positive observations need to be validated with a more racially diverse, larger cohorts.