Performance of Non-invasive Tests to Predict Significant Liver Fibrosis in Patients with Morbid Obesity
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Background
- Non-Alcoholic Fatty Liver Disease (NAFLD) affects more than 90% of patients with morbid obesity (MO).
- NAFLD includes a spectrum of disease that begins with simple steatosis (fatty change), then steatohepatitis (NASH) in 10-15% and eventually cirrhosis in 3-8%.
- Liver biopsy is the gold standard for diagnosis of NASH and stages of fibrosis and cirrhosis; however, several non-invasive blood tests have demonstrated an ability to predict the presence or absence of significant liver fibrosis in hepatitis.

Objectives
- To determine the ability of non-invasive blood tests (NAFLD, BARD, Fib-4, APRI) to predict liver biopsy findings of significant fibrosis (SF) vs no significant fibrosis (NSF) specifically in patients with MO.

Design
- Liver biopsies from patients with MO undergoing gastric bypass surgery were studied retrospectively.
  - Inclusion criteria:
    - BMI ≥ 40 kg/m² or > 35 kg/m² with Diabetes or hypertension
    - Availability of data concerning sex, age, BMI, Diabetes, platelet count, AST, ALT and albumin within 6 months preceding surgery
  - Exclusion criteria:
    - Any other potential cause of liver pathology
    - Test cut-off scores for SF were set using available on-line calculators.

Results

<table>
<thead>
<tr>
<th>Blood Test</th>
<th>Parameters</th>
<th>Sensitivity</th>
<th>Specificity</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAFLD</td>
<td>Age, BMI, AST, ALT, Platelet, Albumin, DM</td>
<td>41.9% (13/31)</td>
<td>86.29% (107/124)</td>
</tr>
<tr>
<td>BARD</td>
<td>BMI, AST, ALT, DM</td>
<td>90.3% (28/31)</td>
<td>29.8% (37/124)</td>
</tr>
<tr>
<td>FIB-4</td>
<td>Age, AST, ALT, Platelet</td>
<td>3.23% (1/31)</td>
<td>100% (124/124)</td>
</tr>
<tr>
<td>APRI</td>
<td>AST, Platelet</td>
<td>16% (5/31)</td>
<td>99% (123/124)</td>
</tr>
</tbody>
</table>

Conclusion
- No single non-invasive test showed sufficient sensitivity and specificity to recommend it.
- Sequential combinations of these non-invasive test results might improve their predictive value.
- Diabetes was associated with SF in patients with MO and is likely to be a risk factor for progressive liver fibrosis.

Graphs and tables showing the distribution of fibrosis stages and the comparison between diabetic and non-diabetic patients.