

Correlation of Liver Stiffness Measurements with AST to Platelet Ratio Index (APRI) and Fibrosis-4 (FIB-4) Scores in Pediatric Patients with Hepatitis B or Liver Transplantation

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Background and Objective:

Current standard for assessing liver fibrosis is biopsy. However, its invasive nature, cost, and limited sampling are problematic for many patients. Fibroscan is a technology that utilizes transient elastography (TE) to measure liver stiffness (LSM) quickly and non-invasively. TE is a novel method in children and has shown to be a measure of fibrosis. Biomarkers for hepatic fibrosis include the APRI and FIB-4 scores, which are not well-studied in children. Our goal is to correlate APRI and FIB-4 with LSM in children who have hepatitis B (hep B) or have received liver transplants (LT).

Methods:

LSM scores of 26 children with hep B and 41 children with LT were retrieved from a research database at Riley Hospital for Children. We then obtained laboratory results closest to the date (+/- 1 year) of their TE. Those results were used to determine APRI and FIB-4 scores. Spearman correlation (r_s) was determined between LSM/APRI, LSM/FIB-4, and APRI/FIB-4 in each disease.

Results:

Table 1. Spearman Correlations for LSM/APRI, LSM/FIB-4, and APRI/FIB-4 in Hep B and LT

| Disease | Comparison | | Spearman Correlation (r_s) |
|---------|------------|-------|--------------------------------|
| Hep B | LSM | APRI | 0.321 |
| | LSM | FIB-4 | 0.376 |
| | APRI | FIB-4 | 0.731* |
| LT | LSM | APRI | 0.303 |
| | LSM | FIB-4 | 0.526* |
| | APRI | FIB-4 | 0.632* |

* $p < 0.05$

Conclusion and Potential Impact:

The moderate correlation of LSM with FIB-4 in LT shows potential for future clinical use, but the correlations of LSM with APRI in both conditions and the correlation of LSM with FIB-4 in Hep B are weaker. APRI and FIB-4 are strongly correlated in these children. However, additional studies with larger sample sizes should be completed. Because patients with LT and chronic hep B regularly need longitudinal evaluation, finding non-invasive tools are important to ensure compliance and ease.