Comparison of accuracy of fibrosis degree classifications by liver biopsy and non-invasive tests in chronic hepatitis C

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Background

Non-invasive tests have been constructed and evaluated mainly for binary diagnoses such as significant fibrosis. Recently, detailed fibrosis classifications for several non-invasive tests have been developed, but their accuracy has not been thoroughly evaluated in comparison to liver biopsy, especially in clinical practice and for Fibroscan. Therefore, the main aim of the present study was to evaluate the accuracy of detailed fibrosis classifications available for non-invasive tests and liver biopsy. The secondary aim was to validate these accuracies in independent populations. Methods

Four HCV populations provided 2,068 patients with liver biopsy, four different pathologist skill-levels and non-invasive tests. Results were expressed as percentages of correctly classified patients. Results

In population #1 including 205 patients and comparing liver biopsy (reference: consensus reading by two experts) and blood tests, Metavir fibrosis (FM) stage accuracy was 64.4% in local pathologists vs. 82.2% (p < 10-3) in single expert pathologist. Significant discrepancy (≥ 2FM vs reference histological result) rates were: Fibrotest: 17.2%, FibroMeter2G: 5.6%, local pathologists: 4.9%, FibroMeter3G: 0.5%, expert pathologist: 0% (p < 10-3). In population #2 including 1,056 patients and comparing blood tests, the discrepancy scores, taking into account the error magnitude, of detailed fibrosis classification were significantly different between FibroMeter2G (0.30 ± 0.55) and FibroMeter3G (0.14 ± 0.37, p < 10-3) or Fibrotest (0.84 ± 0.80, p < 10-3). In population #3 (and #4) including 458 (359) patients and comparing blood tests and Fibroscan, accuracies of detailed fibrosis classification were, respectively: Fibrotest: 42.5% (33.5%), Fibroscan: 64.9% (50.7%), FibroMeter2G: 68.7% (68.2%), FibroMeter3G: 77.1% (83.4%), p < 10-3 (p < 10-3). Significant discrepancy (≥ 2 FM) rates were, respectively: Fibrotest: 21.3% (22.2%), Fibroscan: 12.9% (12.3%), FibroMeter2G: 5.7% (6.0%), FibroMeter3G: 0.9% (0.9%), p < 10-3 (p < 10-3).

Conclusions

The accuracy in detailed fibrosis classification of the best-performing blood test outperforms liver biopsy read by a local pathologist, i.e., in clinical practice; however, the classification precision is apparently lesser. This detailed classification accuracy is much lower than that of significant fibrosis with Fibroscan and even Fibrotest but higher with FibroMeter3G. FibroMeter classification accuracy was significantly higher than those of other non-invasive tests. Finally, for hepatitis C evaluation in clinical practice, fibrosis degree can be evaluated using an accurate blood test.

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