Comparative assessment liver lesions using non-invasive serum biomarkers LIVERFASt™ , FIB4, APRI and liver stiffness measurement (LSM, FibroScan) in chronic hepatitis C (CHC) patients with liver biopsy.

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Background

Despite the high efficacy of current direct acting agents (DAA), in Thailand CHC is still a leading cause of liver-related morbidity and mortality and staging of liver fibrosis is critical for the management of outcomes in patients even after viral cure. LIVERFASt™ (LF, Fibronostics, US) is a proprietary technology based in serum biomarkers to assess quantitatively liver fibrosis (LF-Fib), necroinflammatory (NAI) activity (LF-Act) and steatosis (LF-Ste).

Methods

100 prospective CHC pts preincluded (2 excluded, missing data), with simultaneous liver biopsy (LB), blood biomarkers (LIVERFASt, FIB4, APRI) and applicable liver stiffness measurements (LSM) using FibroScan. Only LSM with quality criteria were included: measurements without failure, IQR/median LSM ratio <30% and success rate >60%. LB staging/grading was as per METAVIR scoring system, for fibrosis: F0 none, F1 portal, F2 few septa, F3 many septa, F4 cirrhosis; for NAI: A0 none, A1 minimal, A2 moderate, A3 severe. Optimal cut off values of LF-Fib and LF-Act were chosen, binary area under the ROC curve (Bin-AUROC) 95%CI were calculated to predict METAVIR significant fibrosis (⩾ F2) and cirrhosis (F4) and important activity (A2A3). Statistical analysis included binary AUROCs (95% CI), descriptive statistics and Spearman correlation coefficient (SCC).

Results

98 Pts were included with concomitant serum biomarkers and LSM with the main characteristics: 66% males, median (range or se) age 55(30-69) yrs, BMI 23.5(0.4) Kg/m^2 , LSM 9.7(1.2)kPa, LF-Fib 0.55(0.03), LF-Act 0.44(0.03) viral genotypes (39%G3, 32%G1a/1b, 28.5%G6), 53% severe NAI, 65% advanced fibrosis (F2F3F4) and 15% cirrhosis (F4). LSM was correlated with all biomarkers with the highest correlation with LF-Fib (SCC 0.59, p<0.0001). Bin-AUROC (95%CI) for predicting significant fibrosis (F2F3F4 stages) with LF-Fib, LSM, FIB4 and APRI were: 0.806 (.702-0.876), 0.810 (.705-.880), 0.754 (.629-.841) and 0.796 (.679- .873), (LF-Fib vs LSM, APRI p=ns and vs FIB4 p=0.07). (Figure 1) In 48 pts having had LB NAI scored, bin-AUROC (95%CI) for predicting important activity was 0.700 (.467-.837), p<0.05 vs 0.50. For a cutoff 0.48 for detecting F2 the sensitivity, specificity, PPV, and NPV were 73.4%, 82.5%, 59.5% and 55.4%, respectively.

Conclusion

In Thai CHC pts, LF-Fib and LF-Act addresses a critical need for further management of HCV by identifying pts for priority HCV therapy and, after virological cure those having severe liver fibrosis for long-term follow up.

Figure 1. Bin-AUROC for predicting significant fibrosis (F2F3F4 stages) with LF-Fib, LSM, FIB4 and APRI.