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LIVER BIOPSY, IMAGING AND BIOCHEMICAL SCORES – THE INVASIVE – NONINVASIVE AGREEMENT

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Background: Liver biopsy (LB) is still the gold standard in the evaluation of liver fibrosis, but is expensive, hardly accepted and invasive. Fibroscan and Fibrotest are already verified against LB, but they cost. APRI, FIB-4, Forns are free and based on widely available tests. The aim of our study was to compare the effectiveness of these methods and to see which combination of them would work best to improve the accuracy of the investigation.

Methods: We analyzed the data of 230 patients with chronic hepatitis B or C. They all had LB, Fibroscan, Fibrotest and CBC performed during a period of maximum one week. APRI, FIB-4 and Forns were then calculated based on the values used for Fibrotest and CBC.

Results:

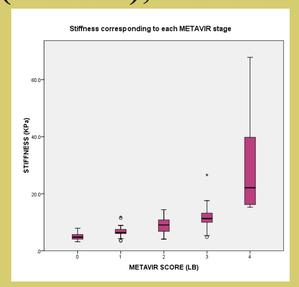
Characteristics of the patients

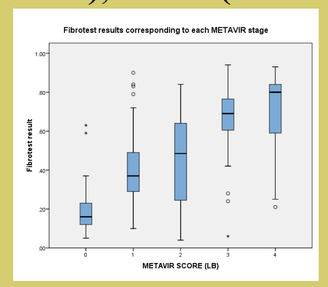
Number of patients:	230
Male:	136 (59.13%)
Age at biopsy:	46.64 (+/- 11.6) years
Hepatitis C/Hepatitis B	130/100

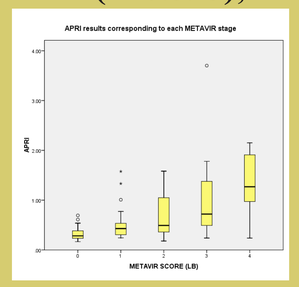
Fibrosis stage (LB - METAVIR score)

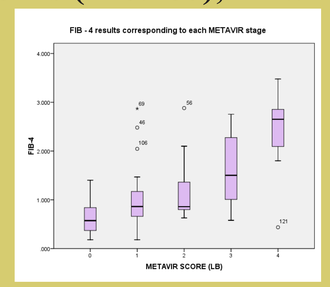
F0	46
F1	67
F2	38
F3	48
F4	31

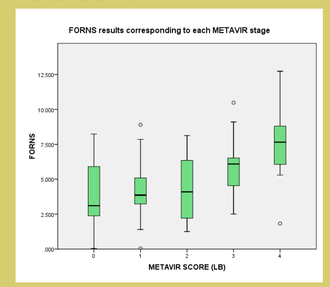
An overall significant correlation was found between LB and the noninvasive methods as follows: Fibroscan (r=0.869), Fibrotest (r=0.723), FIB-4 (r=0.625), APRI (r=0.595), and Forns (r=0.487), all with p<0.0001.



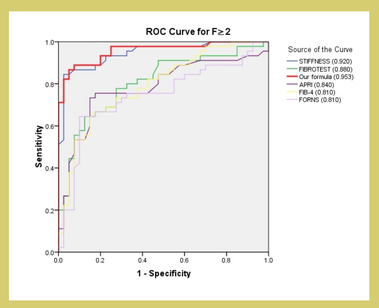


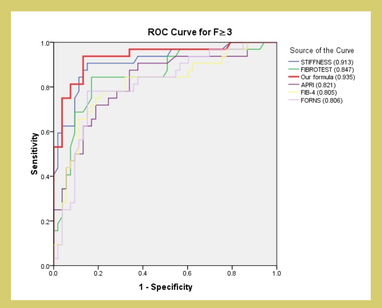


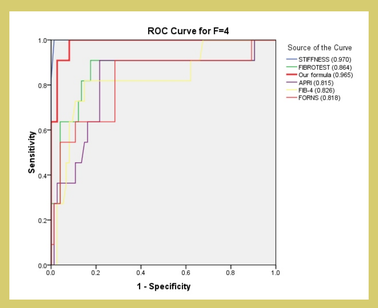




These correlations maintained when we looked into cases by etiology, except for Forns, which was only correlated for C hepatitis. For all methods, the correlation was better in patients with C hepatitis.

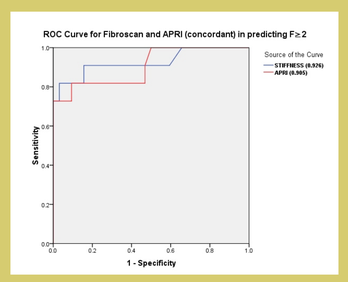


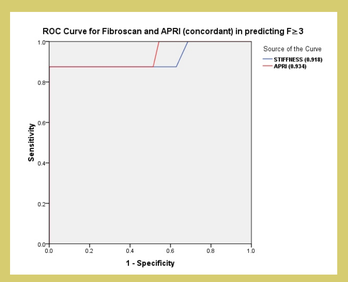


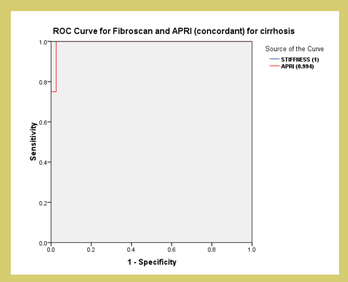


For identifying significant fibrosis (F≥2), all noninvasive methods performed well, elastography had the best sensibility and specificity (AUROC = 0.902) and was followed by APRI (AUROC = 0.806). A combination of these two methods ("Our formula" in charts) had an even better AUROC: 0.953.
For F≥3, Fibroscan performed again the best (AUROC = 0.913), and the second was Fibrotest (AUROC = 0.847). The combination of Stiffness and APRI had again the best AUROC: 0.935 (CI95%=0.916-0.990). For lower grades (0 and 1), their performance was poorer, with AUROC under 0.75.

If we considered satisfactory a difference of maximum one Metavir stage between them, Fibroscan and Fibrotest were concordant in 163 patients (70.86%). For these patients, the performance of the two noninvasive methods in detecting significant fibrosis (F≥2 and F≥3) an cirrhosis were very high (AUROC over 0.950).
Fibroscan and APRI were concordant in identifying significant fibrosis (cut-offs of 7.1 Kpa and 1.5 respectively) in 143 patients (61.73%)







In our group, for the patients in which APRI and Fibroscan were concordant as above mentioned, both methods had a very good performance in identifying significant fibrosis (F≥2 with AUROC over 0.905), severe fibrosis (F≥3 with AUROC over 0.918) and cirrhosis (with AUROC over 0.994). This means that if we would use elastography and a biochemical score together we could correctly and reliable classify over 60% of our patients in respect of fibrosis without the need of a liver biopsy. On the other hand, for the rest of 30 - 40% of patients we still have to perform biopsy or find alternatives.

Conclusions: Noninvasive tests are very useful in confirming or excluding a significant fibrosis, but they are not very accurate in staging low grades of fibrosis. For cirrhosis, all studied methods are very accurate. We found a combination of two markers (Fibroscan and APRI) with very high sensibility and specificity (AUROC = 0.953) for the identification of significant fibrosis. Using APRI and Fibroscan separately we can reliably avoid LB in over 60% of the patients.