

Perazzo 2014
FibroMax
Prognosis
Metabolic

Prognostic value of liver fibrosis and steatosis biomarkers in type-2 diabetes and dyslipidaemia.

Perazzo H, Munteanu M, Ngo Y, Lebray P, Seurat N, Rutka F, Couteau M, Jacqueminet S, Giral P, Monneret D, Imbert-Bismut F, Ratzu V, Hartemann-Huertier A, Housset C, Poynard T; the FLIP Consortium.

Aliment Pharmacol Ther. 2014 Sep 3. doi: 10.1111/apt.12946

A study carried out in 2312 patients with type-2 diabetes and / or dyslipidemia followed for 12 years assessed the prognostic value of non-invasive biomarkers (FibroMax panel) of liver fibrosis (FibroTest) and steatosis (SteatoTest) in patients with type diabetes 2 and / or dyslipidemia. The presence of advanced fibrosis or severe steatosis was associated with an increased risk of overall mortality. In addition, a presence of an advanced liver fibrosis at baseline but also the progression to advanced liver fibrosis during follow-up, were both predictors of cardiovascular events in patients with type 2 diabetes.

Park 2014
FibroTest
HBV
Prognostic

Prognostic value of the combined use of transient elastography and FibroTest in patients with hepatitis B.

Park MS, Kim SU, Kim BK, Park JY, Kim DY, Ahn SH, Shin SH, Kang W, Moon C, Han KH.

Liver Int. 2014 Sep 2. doi: 10.1111/liv.12678.

An independent study evaluates the prognostic value of the combination of FibroTest and the transient elastography by Fibrosan to predict hepatic events in 151 patients with chronic hepatitis B. Authors concluded that the combination FibroTest-Elastography significantly predicted the development of liver complications but with only a slight additional advantage compared to FibroTest alone.

Bonnard 2014
FibroTest
HCV
Genotype 4
Schistosomiasis

Comparison of liver biopsy and noninvasive techniques for liver fibrosis assessment in patients infected with HCV-genotype 4 in Egypt.

Bonnard P, Elsharkawy A, Zalata K, Delarocque-Astagneau E, Biard L, Le Foulher L, Hassan AB, Abdel-Hamid M, El-Daly M, Gamal ME, El Kassas M, Bedossa P, Carrat F, Fontanet A, Esmat G.

J Viral Hepat. 2014 Jul 30. doi: 10.1111/jvh.12285.

An evaluation of noninvasive methods compared to the biopsy was performed in Egypt in 312 patients with chronic hepatitis C (CHC) genotype 4 often with co-infection with schistosomiasis, which could theoretically interfere with the results. There was no observed effect of schistosomiasis coinfection on the results of FibroTest standard AUROC for clinically significant fibrosis (METAVIR F2-F4) that was 0.71 without adjusting for the spectrum effect.

FibroTest/FibroSure Scientific Publications

Key Publications for 2014

Friedrich-Rust
2014
FibroTest
Cystic Fibrosis

Non-invasive measurement of liver and pancreas fibrosis in patients with cystic fibrosis.

Friedrich-Rust M, Schlueter N, Smaczny C, Eickmeier O, Rosewich M, Feifel K, Herrmann E, Poynard T, Gleiber W, Lais C, Zielen S, Wagner TO, Zeuzem S, Bojunga J.

The purpose of this study was to evaluate the prevalence of hepatic fibrosis (by transient elastography (TE) by Fibroscan, ARFI and FibroTest) in patients 106 with cystic fibrosis who have increased morbidity and mortality by liver disease complications. FibroTest results were corrected for haptoglobin parameter using the median value to avoid the risk of false negative induced inflammation with significant elevation of haptoglobin. Haptoglobin correction improved the correlation between FibroTest and imaging TE and ARFI, suggesting that correction of haptoglobin is necessary in patients with cystic fibrosis in the calculation of FibroTest for liver fibrosis evaluation.

Leroy 2014
FibroTest Accuracy
HBV
HCV

Prospective evaluation of FibroTest, FibroMeter and HepaScore for staging liver fibrosis in CHB: comparison with CHC.

Leroy V, Sturm N, Faure P, Trocme C, Marlu A, Hilleret MN, Morel F, Zarski JP.

J Hepatol. 2014 Jul;61(1):28-34. doi: 10.1016/j.jhep.2014.02.029. Epub 2014 Mar 11.

510 mono-infected patients with chronic hepatitis B (CHB) or C (CHC) and matched on the stage of fibrosis were included for direct comparison of the diagnostic performance of FibroTest and other scores (Hepascore, Fibrometres). Standard AUROCs FibroTest for F2, F3 and F4 were for CHB 0.77, 0.82, 0.84 and for CHC 0.81, 0.84, 0.87, respectively. A significant correlation was observed between stages of fibrosis and the test results, $r = 0.58$ and 0.62 for CHB and CHC. By grouping patients F0F1, median scores were significantly lower in Fibrometres CHB patients compared with CHC, while there was no statistically significant difference for the FibroTest and Hepascore. No significant overall differences were observed between the three AUROCs blood tests when subgroups of CHB and CHC were studied separately.

Calin 2013
FibroTest
HIV + HBV-G
Natural History

Role of genotype G hepatitis B virus mixed infection on the progression of hepatic fibrosis in HIV positive patients over 5 years of follow-up.

Calin R, Guiguet M, Desire N, Imbert-Bismut F, Munteanu M, Poynard T, Valantin MA, Stitou H, Katlama C, Thibault V.

J Clin Virol. 2013 Oct;58(2):408-14.

FibroTest was used to assess the dynamics of liver fibrosis changes in co-infected patients to better describe the role of HBV genotype G (HBV-G) during co-infection with HIV. The cross-sectional analysis of 125 subjects did not show a difference in the severity of fibrosis assessed by FibroTest between patients not infected with HBV-G compared to those HBV-G. Co-infection with other hepatitis and low CD4 nadir, but not HBV-G virus, have been associated with a risk of 5-year progression of fibrosis.

FibroTest/FibroSure Scientific Publications

Key Publications for 2014

Naveau 2014
FibroTest
Alcohol
ALD
New validation

Comparison of Fibrotest and PGAA for the diagnosis of fibrosis stage in patients with alcoholic liver disease.

Naveau S, Essoh BM, Ghinoiu M, Marthey L, Njiké-Nakseu M, Balian A, Lachgar M, Prévot S, Perlemuter G.

Eur J Gastroenterol Hepatol. 2014 Apr;26(4):404-11.

200 consecutive ALD patients were included and the diagnostic performance measurement was made by the Obuchowski method in order to avoid spectrum bias. The FibroTest AUROC (SE) by Obuchowski was 0.92 (0.01) for both FibroTest and PGAA. One limitation of the study is related to the lack of discussion on the clinical applicability of non-patented markers whose reproducibility and analytical variability have not been tested, especially when they include in their algorithms not standardised parameters as the prothrombin time for PGAA.

Salkic 2014
FibroTest
HBV
Meta-analysis

FibroTest/Fibrosure for significant liver fibrosis and cirrhosis in chronic hepatitis B: a meta-analysis.

Salkic NN, Jovanovic P, Hauser G, Brcic M.

Am J Gastroenterol. 2014 Jun;109(6):796-809.

A systematic review of studies with FibroTest vs biopsy in chronic hepatitis B (CHB) was made recently by Salkic et al. using MEDLINE and EMBASE searches with a total of 16 identified studies (N = 2494) and 13 studies (N = 1754) included in the meta-analysis of heterogeneity for advanced fibrosis and cirrhosis, respectively. The AUROCs (95% CI) for significant fibrosis and cirrhosis were excellent, 0.84 (0.78-0.88) and 0.87 (0.85-0.90), respectively, including all CHB studies. Although the meta-analysis presents some limitations related to the lack of individual data, it re-validates FibroTest in CHB.

Sebastiani 2014
Non-invasive methods
Canada
Survey

Physicians' practices for diagnosing liver fibrosis in chronic liver diseases: a nationwide, Canadian survey.

Sebastiani G, Ghali P, Wong P, Klein MB, Deschenes M, Myers RP.

Can J Gastroenterol Hepatol. 2014 Jan;28(1):23-30.

A national survey was conducted in Canada to describe the practice among medical specialists (hepatologists, infectious disease specialists) for the assessment of fibrosis in patients with chronic liver disease; 104 experts responded. The main diagnostic tool remains liver biopsy followed by elastography and FibroTest in 8% of them. However, more than half of the experts used non-invasive methods when it comes to chronic hepatitis B and C. The physicians using non-invasive methods were older, on private or university hospital practice.

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FibroTest/FibroSure Scientific Publications

Key Publications for 2014

Minville 2014
FibroMax
FibroTest
Sleep Apnea

Nonalcoholic fatty liver disease, nocturnal hypoxia, and endothelial function in patients with sleep apnea.

Minville C, Hilleret MN, Tamisier R, Aron-Wisnewsky J, Clement K, Trocme C, Borel JC, Lévy P, Zarski JP, Pépin JL.

Chest. 2014 Mar 1;145(3):525-33.

The nocturnal hypoxia characteristic of obstructive sleep apnea (OSA) is a potential contributing factor to the development of non-alcoholic fatty liver disease (NAFLD). The panel FibroMax (including SteatoTest, NashTest, and FibroTest) were used to assess noninvasively steatosis, steatohepatitis (NASH) and fibrosis cohort 226 patients with OSA. 61.5% of patients had moderate or severe steatosis and the independent factors associated with were : triglycerids levels, insulin resistance and the nocturnal cumulative duration with oxygen saturation <90% (CT90); 38% of subjects had borderline NASH (N1) or NASH (N2) according to NashTest and that was associated with waist circumference, triglycerids, HOMA-IR and the metabolic syndrome ; and 20% of subjects had advanced fibrosis or cirrhosis and age > 50 years, male gender, abnormal blood sugar or diabetes were all factors associated with fibrosis (F1 or more). Relationship between CT90 and hepatic lesions was observed only in the morbidly obese subjects. In conclusion, NAFLD could be a dysfunction in the mechanisms involved in the OSA, and NAFLD and NASH could be easily evaluated by the FibroMax panel in subjects with OSA.

Poynard 2014
FibroTest
Cirrhosis severity
HCV

Staging chronic hepatitis C in 7 categories using fibrosis biomarker (FibroTest™) and transient elastography (FibroScan®).

Poynard T, et al

J Hepatol. 2014;60:706-14.

The aim of the study was to extend the validation of FibroTest and transient elastography (TE) by FibroScan as markers of severity of cirrhosis, defined by the following critical steps: cirrhosis without complications (F4.1 = FibroTest score 0.75-0.84), occurrence of esophageal varices (F4.2 = FibroTest score 0.85-0.94) and severe complications (F4.3 = FibroTest score 0.95-1.00): primary liver cancer, bleeding from varices or decompensation (ascites, encephalopathy, or jaundice). Individual data updates to 3927 patients, including 1046 with cirrhosis without complications at baseline were collected from three prospective cohort studies ("EPIC," "Paris," and "Bordeaux"). Among patients without varices at baseline, the incidence of varices at 5 years was 4% with a significant predictive value for FibroTest (AUROC 0.77, $p < 0.001$). At 10 years, the FibroTest was predictive of serious complications, including hepatocellular carcinoma (AUROC 0.84 $p < 0.0001$). Similarly to FibroTest, transient elastography was predictive of serious complications ($p < 0.0001$) but with a lesser applicability. The authors conclude that the increase in FibroTest scores was associated with the occurrence of serious complications, including all hepatocellular carcinoma, liver failure, and bleeding of esophageal varices but also associated with the development of esophageal varices.

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FibroTest/FibroSure Scientific Publications

Key Publications for 2014

Chou 2014
Non-invasive methods
HCV

Blood tests to diagnose fibrosis or cirrhosis in patients with chronic hepatitis C virus infection: a systematic review.

Chou R, Wasson N.

Ann Intern Med. 2013;158:807-20.

172 studies have evaluated the diagnostic value of different non-invasive methods. To identify clinically significant fibrosis were assessed the following methods: platelets, the age-platelet index, APRI, FibroIndex, FibroTest and Forns with AUROCs of 0.70 or higher (between 0.71 and 0.86). FibroTest had the largest number of studies (n=32) with high diagnostic quality. FibroTest had higher fibrosis AUROC than APRI in -8 direct comparison studies; median difference 0.03 (0.07 to 0.10).

Pan 2014
HBV
Tenofovir Follow-up

Efficacy and safety of tenofovir disoproxil fumarate in asian-americans with chronic hepatitis B in community settings.

Pan CQ et al.

PLoS One. 2014;9:e89789

The study was conducted in adult Asian American patients with chronic hepatitis B (CHB), prospectively enrolled and treated with tenofovir 300 mg once daily and for 48 weeks. The impact of Tenofovir treatment on fibrosis was assessed by repeated FibroTest at baseline and at week 48 (W48). 90 patients were included, 60% were HBeAg-positive at baseline and, at W48, 82 % had undetectable HBV DNA and normal ALT in 66%. The percentage of patients with FibroTest score F0 (no fibrosis) has increased from 48% to 51%, and the percentage of F4 (cirrhosis) decreased from 4% to 1%. Two patients had F3 at baseline and F2 at W48. The 4 patients with F4 (cirrhosis) fibrosis at baseline have regressed at W48 (3 F3 and one F2) No patient had worsening of cirrhosis during the study. Once again, this longitudinal study highlights the usefulness of FibroTest for longitudinal monitoring of CHB patients undergoing long-term treatment.

Trabut 2014
FibroTest
Alcohol
ALD
Review

Prognosis assessment of alcoholic liver disease: how and why?

Trabut JB, et al.

Presse Med. 2014;43:124-34.

Liver histology is the main parameter that predicts morbidity and mortality in patients with alcoholic liver disease. The non-invasive methods, such as biomarkers (eg FibroTest or transient elastography by FibroScan) allow the diagnosis of liver lesions induced by alcohol without resorting to systematic biopsy. The authors list the main validation for the diagnosis and prognosis markers including FibroTest in alcoholic liver disease.

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FibroTest/FibroSure Scientific Publications

Key Publications for 2014

Merkur Lekarski
2013
FibroMax
Alcohol
Revalidation

The diagnostic value of non-invasive biochemical biomarkers in alcohol abuse.

Supronowicz Ł, et al.

Pol Merkur Lekarski. 2013;35:148-50.

137 excessive alcohol consumers have been included in the validation group along with 50 healthy social drinkers in the control group. The sensitivity and specificity of diagnosis were 62% and 94% for SteatoTest and 61% and 94% for FibroTest, respectively. The diagnostic values (AUROCS) of SteatoTest and FibroTest were 0.81 and 0.80, respectively. The likelihood of obtaining a positive test a (SteatoTest and FibroTest) result was 10 times higher among heavy drinkers than in healthy social drinkers. The authors concluded that the SteatoTest and FibroTest can be diagnostic tools for the detection of steatosis and hepatic fibrosis in excessive alcohol drinkers.

Castera 2014
FibroTest
HCV + HIV
Combination

Comparison of transient elastography (FibroScan), FibroTest, APRI and two algorithms combining these non-invasive tests for liver fibrosis staging in HIV/HCV coinfecting patients

Castera L, et al. HIV Med. 2014;15:30-9

The authors compared by referring to the liver biopsy, the performance of transient elastography (TE), FibroTest and APRI to those of two algorithms combining TE and FibroTest (Castera-Algo) or APRI and FibroTest (SAFE-Algo) in 116 patients HIV-HCV coinfecting enrolled in two French multicenter studies (HEPAVIH and FIBROSTIC). For advanced fibrosis, FibroTest and TE had diagnostic performance (AUROC = 0.85 and 0.87) higher than the APRI (P <0.005). The authors concluded that in patients HIV-HCV coinfecting, TE and FibroTest had similar diagnostic value for significant fibrosis, whereas for cirrhosis TE has the best accuracy but only per protocol, not taking into account the low applicability of the TE that decreases performance in intention to diagnose. The use of Castera or SAFE algorithms does not improve the diagnostic performance.

Perazzo 2014
APRI
Analytics
ALT

Variability in definitions of transaminase upper limit of the normal impacts the APRI performance as a biomarker of fibrosis in patients with chronic hepatitis C: "APRI c'est fini ?".

Perazzo H et al. & EPIC3 Group.

Clin Res Hepatol Gastroenterol. 2014 Sep;38(4):432-9.

Some noninvasive markers include transaminase ALT or AST (example of APRI). The study proposed to evaluate the impact on fibrosis markers of two transaminase-related limitations: 1) the lab-related variability in the definition of the upper limit of normal AST (AST-ULN) and 2) the risk of overestimation of fibrosis associated with necroinflammatory activity. For this, two control populations were used: N=7521 healthy volunteers and N=393 blood donors and a population of patients (N=1651) with APRI score, FibroTest and biopsy. ULN AST-varied in the control populations from 26 to 49 IU/L, varying the prevalence of advanced fibrosis stages and cirrhosis from 34.7% to 68.5% and from 11.4% to 32.3%, respectively (all p <0.0001). The diagnostic performance of APRI varied significantly, whereas the performance of FibroTest not including transaminase were stable. In conclusion, AST-ULN variability could lead to erroneous performance of APRI and other tests of fibrosis including transaminase.

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FibroTest/FibroSure Scientific Publications

Key Publications for 2014

Poynard 2014
FibroTest
HBV
Cirrhosis Severity

Staging chronic hepatitis B into seven categories, defining inactive carriers and assessing treatment impact using a fibrosis biomarker (FibroTest®) and elastography (FibroScan®).

Poynard T, Vergniol J, Ngo Y, Foucher J, Thibault V, Munteanu M, Merrouche W, Lebray P, Rudler M, Deckmyn O, Perazzo H, Thabut D, Ratzu V, de Ledinghen V; FibroFrance Study Group and the Bordeaux HBV Study Group.

J Hepatol. 2014 Jul 10. pii: S0168-8278(14)00457-7.

According to the model validated in chronic hepatitis C, this study validated FibroTest and the transient elastography (TE) as severity markers of cirrhosis (F4), defined by the following critical steps: uncomplicated cirrhosis (F4.1), occurrence of esophageal varices (F4.2) and severe complications (from F4.3): primary liver cancer, bleeding from varices or decompensation (ascites, encephalopathy or jaundice). After 10 years of follow-up of 1312 patients pooled from two prospective cohorts ("Paris" and "Bordeaux") with no history of complications, the incidence was 1.7% F4.2 and 3.7% F4.3 including hepatocellular carcinoma (HCC). FibroTest and TE were predictive for F4.2 and F4.3 and can identify cirrhosis patients with high morbidity. In addition, the combination of normal FibroTest-ActiTest better identified the low progression of fibrosis and inactive HBV carriers, compared with their standard definition based on ALT.

Lynch 2014
FibroTest
Methotrexate

The Use of Transient Elastography and FibroTest for Monitoring Hepatotoxicity in Patients Receiving Methotrexate for Psoriasis.

Lynch M, Higgins E, McCormick PA, Kirby B, Nolan N, Rogers S, Lally A, Vellinga A, Omar H, Collins P.

Am J Gastroenterol 2014; 109:1287-1288; doi:10.1038/ajg.2014.137

The study proposed to evaluate the FibroTest and transient elastography (TE) in 77 patients with psoriasis treated with methotrexate recruited prospectively from a Department of Dermatology; subjects with abnormal results underwent liver biopsy. A surprisingly low number of patients - only 50/77 (65%) - had applicable TE by FibroScan according to quality criteria. 18% had a score >7.1 kPa considered abnormal and BMI and age were factors associated with TE scores >7.1 kPa. According to FibroTest, 16% had fibrosis F1 Metavir or higher with age, cumulative dose and duration of methotrexate treatment were factors correlated with abnormal FibroTest results. Only 5 patients agreed biopsy. The authors recommended repeated non-invasive methods for monitoring liver injury in patients with psoriasis and methotrexate treatment as only 6.5% accepted a liver biopsy.

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FibroTest/FibroSure Scientific Publications

Key Publications for 2014

Xu XY 2014
FibroTest
HBV
Meta-Analysis

The effectiveness of noninvasive biomarkers to predict hepatitis B-related significant fibrosis and cirrhosis: a systematic review and meta-analysis of diagnostic test accuracy.

Xu XY, Kong H, Song RX, Zhai YH, Wu XF, Ai WS, Liu HB.

PLoS One. 2014 Jun 25;9(6):e100182.

This is a conducted systematic review of published literature on PubMed, EMBASE and Cochrane (30 studies) to compare the diagnostic performance and accuracy (QUADAS survey) in chronic hepatitis B (HCB) for the three biomarkers : APRI, FIB-4, and FibroTest. Standard AUROCs for APRI, FIB-4, and FibroTest were for fibrosis 0.77, 0.75, and 0.84 and for cirrhosis 0.75, 0.87, and 0.90, respectively. Age and etiology affected the diagnostic performance of APRI but not that of FibroTest. The authors concluded that the Fibrotest had excellent diagnostic accuracy for identifying fibrosis and cirrhosis associated with chronic hepatitis B, while the FIB-4 had only modest benefits.

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<http://library.biopredictive.com/>

The screenshot shows the BioPredictive Library website interface. At the top, there are navigation tabs: "by Test", "by Comparison", "by Disease", and "by Liver Injuries". A search bar is located on the right. The main header reads "BioPredictive Publications" with a logo on the right. Below the header, a brief description states: "FibroTest-ActiTest is the non-invasive liver test benchmark. Launched more than 10 years ago FibroTest success relies on the quality of its scientific background. Consecutively, SteatoTest, NashTest and AshTest were finalized with the same demanding quality. BioPredictive offers with this site the exhaustivity of its extensive scientific work - 244 studies have been published by 1009 authors in 76 journals - all publications are tagged for an easy browsing." The main content area displays two search results. The first result is titled "2013 - Nature reviews. Gastroenterology & hepatology - Castéra, Laurent" with the subtitle "Noninvasive evaluation of NAFLD." and author "Castéra L, Vilgrain V, Angulo P". It includes a list of tags: Review, FibroTest, ActiTest, SteatoTest, NashTest, Independent Team, Elastography, Biomarkers, Metabolic Diseases, Fibrosis, Steatosis. The second result is titled "2013 - HIV medicine - Castéra, Laurent" with the subtitle "Comparison of transient elastography (FibroScan), FibroTest, APRI and two algorithms combining these non-invasive tests for liver fibrosis staging in HIV/HCV coinfecting patients: ANRS CO13 HEPAVIH and FIBROSTIC collaboration." and author "Castéra L, Winmook M, Pambun E, Paradis V, Perez P, Loko MA, ...". On the right side of the results, there are filters: "214 publications" (Articles), "by Journal" (Select a journal), "by Authors" (Select an author), and "by Kind" (Article, Letter, Guidelines, Health Authorities). Below that, there is a "by Test" filter with checkboxes for FibroTest, ActiTest, SteatoTest, NashTest, AshTest, and HIV Co-Infected.

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