Prevalence and factors associated with failure of liver stiffness measurement using FibroScan® in a prospective study of 2114 examinations

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Abstract

• Background & aims. Recently, we have shown that liver stiffness measurement (FibroScan®, Echosens, France) was a reliable non-invasive method for the assessment of liver fibrosis. However, in around 5% of cases, no value could be obtained. The aim of this prospective study was to assess the prevalence and factors associated with failure of liver stiffness measurement.

• Methods. All patients with chronic liver disease and liver stiffness measurement between May 2003 and April 2005 were included. Failure of liver stiffness measurement was defined as no value obtained after 10 measurements. Clinical and biological factors associated with failure were analyzed using Chi-square, t-Student test, and logistic regression.

• Results. 2114 liver stiffness measurements were analyzed. Characteristics of patients were: 1168 males, mean age 52 ± 13 years, BMI 24.4 ± 4.4 (range: 12-49). Indications for FibroScan® were HCV (55.5%), HBV (5.5%), alcohol (9%), NASH (9.5%). Failure of liver stiffness measurement was observed in 4.5% of cases. By univariate analysis, factors associated with failure were BMI > 28 (OR 9.1, 95%CI 5.8-14.0, p<0.001), diabetes (OR 2.1, 95%CI 1.2-3.7, p=0.01), age > 50 years (OR 4.0, 95%CI 2.7-6.3, p<0.001), NASH (OR 3.4, 95%CI 1.7-6.9, p=0.001), and gGT level (OR 2.0, 95%CI 1.2-3.7, p=0.001).

• Conclusion. Liver stiffness measurement was successful in 95.5% of cases. Failure of liver stiffness measurement was observed in 4.5% of cases. BMI > 28 was the only factor associated with failure. FibroScan® is feasible in more than 95% of patients. However, FibroScan® is feasible even in severe obese patients (BMI > 49). Other non-invasive methods such as biochemical methods or liver biopsy could be used only in patients with failure of FibroScan® examination.

Prevalence of failure of FibroScan®

96 patients 4.5%

Factor associated with liver stiffness measurement failure (multivariate analysis)

Odds Ratio : 10.0
95%CI: 5.7-17.9
p<0.001

Conclusion

• FibroScan® is feasible in more than 95% of patients.
• The only factor associated with failure is obesity. However, FibroScan® is feasible even in severe obese patients (BMI > 49).
• Other non-invasive methods such as biochemical methods or liver biopsy could be used only in patients with failure of FibroScan® examination.

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