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Original article

Utility of transient elastography (fibroscan) and impact of bariatric surgery on nonalcoholic fatty liver disease (NAFLD) in morbidly obese patients

Harshit Garg, M.B.B.S, M.S.[a], Sandeep Aggarwal, M.B.B.S, M.S.[a,*], Shalimar, M.B.B.S, M.D., D.M.[b], Rajni Yadav, M.B.B.S, M.D.[c], Siddhartha Datta Gupta, M.B.B.S, M.D.[c], Lokesh Agarwal, M.B.B.S, M.S.[a], Samagra Agarwal, M.B.B.S, M.D.[d]

[a]*Department of Surgical Disciplines, All India Institute of Medical Sciences (AIIMS), New Delhi, India*
[b]*Department of Gastroenterology, All India Institute of Medical Sciences (AIIMS), New Delhi, India*
[c]*Department of Pathology, All India Institute of Medical Sciences (AIIMS), New Delhi, India*
[d]*Department of Internal Medicine, All India Institute of Medical Sciences (AIIMS), New Delhi, India*

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Abstract

Background: Controlled attenuation parameter (CAP) is a novel, noninvasive technique for assessing hepatic steatosis. However, its role in morbidly obese individuals is unclear. The effect of bariatric surgery on inflammation and fibrosis needs to be explored.

Objectives: To assess the utility of CAP for assessment of hepatic steatosis in morbidly obese individuals and evaluate the effect of bariatric surgery on hepatic steatosis and fibrosis.

Setting: A tertiary care academic hospital.

Methods: Baseline details of anthropometric data, laboratory parameters, FibroScan (XL probe), and liver biopsy were collected. Follow-up liver biopsy was done at 1 year.

Results: Of the 124 patients screened, 76 patients were included; mean body mass index was 45.2 ± 7.1 kg/m^2. FibroScan success rate was 87.9%. The median liver stiffness measurement (LSM) and CAP were 7.0 (5.0–9.5) kPa and 326.5 (301–360.5) dB/m, respectively. On liver histopathology, severe steatosis and nonalcoholic steatohepatitis were present in 5.3% and 15.8%; significant fibrosis (≥stage 2) and cirrhosis in 39.5% and 2.6%, respectively. Area under receiver operator characteristic curve of LSM for prediction of significant fibrosis (F2–4 versus F0–1) and advanced fibrosis (F3–4 versus F0–2) was .65 (95% confidence interval [CI]: .52–.77) and .83 (95% CI: .72–.94), respectively. The area under receiver operator characteristic curve of CAP for differentiating moderate hepatic steatosis (S2–3 versus S0–1) and severe hepatic steatosis (S3 versus S0–2) was .74 (95% CI: .62–.86) and .82 (95% CI: .73–.91), respectively. At 1-year follow-up, 32 patients underwent liver biopsy. In these patients, there was significant improvement in hepatic steatosis ($P = .001$), lobular inflammation ($P = .033$), ballooning ($P < .001$), and fibrosis ($P = .003$). Nonalcoholic steatohepatitis was resolved in 3 of 4 (75%) patients. LSM and CAP significantly declined.

Conclusions: LSM and CAP are feasible and accurate at diagnosing advanced fibrosis and severe hepatic steatosis in morbidly obese individuals. Bariatric surgery is associated with significant improvement in LSM, CAP, steatohepatitis, and fibrosis. (Surg Obes Relat Dis 2018;14:81–92.)

Keywords: FibroScan; Transient elastography; Nonalcoholic fatty liver disease (NAFLD); Morbid obesity; Bariatric surgery

Nonalcoholic fatty liver disease (NAFLD) is one of the major causes of chronic liver disease worldwide [1]. The prevalence in the general population varies between 25% and 30%, increasing up to 70% to 90% in the morbidly

*Correspondence: Sandeep Aggarwal, M.B.B.D., M.D., Department of Surgical Disciplines, All India Institute of Medical Sciences (AIIMS), Ansari Nagar, New Delhi, India.

E-mail: sandeep_aiims@yahoo.co.in; sandeep_aiims@aiims.ac.in

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