Changing from NAFLD to MASLD: Cumulative incidence of gallstones between patients with NAFLD and those with MASLD in Asia

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Abbreviations
MASLD: metabolic dysfunction-associated steatotic liver disease
NAFLD: nonalcoholic fatty liver disease
SLD: steatotic liver disease
Keywords
steatotic liver disease; metabolic; steatosis; gallstones

Dear Editor

In June 2023, a consensus group composed of multiple societies opted to replace the term nonalcoholic fatty liver disease (NAFLD) with metabolic dysfunction-associated steatotic liver disease (MASLD) to minimize the potential for stigma and more accurately reflect its underlying pathophysiology.1 Although using alternative terminology can lead to occasional misunderstandings and hinder progress, extending investigations of NAFLD to MASLD is crucial. This will ensure that valuable research resources are effectively utilized and will contribute to advancing knowledge in this field.

Approximately 5-25% of adults have gallstone diseases, including ultrasonographic gallstones or a history of cholecystectomies.2 Gallstone diseases are associated with a higher risk of all-cause and cause-specific mortality.3 Gallstones have been reported to be associated with metabolic abnormalities, such as hyperlipidemia, obesity, and diabetes mellitus.2 Previous reports have demonstrated that NAFLD is also a risk factor for gallstones.3,4 The diagnostic criteria for MASLD include metabolic abnormalities, which are risk factors for gallstones and are expected to be more strongly associated with gallstones than with NAFLD.1

We aimed to compare the incidence of gallstones between patients with NAFLD and those with MASLD in Asia. This investigation included 1,0108 consecutive health check examinees who underwent ultrasonography and were monitored at the Saga Health and Clinical Examination Center (Saga, Japan) between May 2008 and January 2021. We eliminated 1,467 participants from our sample because of moderate or higher alcohol consumption (>20 g/30 g of alcohol per day in female and male individuals; n=279), hepatitis B virus infection, or hepatitis C virus infection (n=184). Participants with gallstones diagnosed by ultrasonography (n=777) and patients after cholecystectomy (n=227) at the first check-up
were also excluded. Finally, data from 8,641 participants were analyzed. The study population comprised 2,560 individuals diagnosed with steatotic liver disease (SLD). NAFLD was diagnosed in 29.6% (2,560/8,641) of participants, including 200 who did not fulfill the cardiometabolic criteria for MASLD (Fig. 1A). These cases were classified as those of cryptogenic SLD, and a significant proportion (92.2%) of the patients with NAFLD were also diagnosed with MASLD. Our findings are consistent with those of a previous study that reported that almost all patients with NAFLD fulfilled the MASLD criteria.5

Gallbladder and liver assessments were based on abdominal ultrasonography results. Gallstones were diagnosed based on the presence of both echogenic areas within the gallbladder and reproducible acoustic shadowing in two views.6 The criteria for fatty liver on ultrasonography are increased hepatorenal echo contrast, liver brightness, vessel blurring, and deep attenuation.7 MASLD was defined by SLD with at least one cardiometabolic risk factor without excessive alcohol intake.1 Gallstone development was defined as a change in status from gallstone absence to the presence of a gallstone. Differences in the cumulative incidence of gallstones between patients with NAFLD/MASLD and those with non-SLD were analyzed using the log-rank test.

The cumulative incidence of gallstones was significantly higher in NAFLD/MASLD than in non-SLD (Fig. 1B). However, the cumulative incidence of gallstones did not differ significantly between patients with NAFLD and those with MASLD. These results indicate that excluding cases of cryptogenic SLD from those of NAFLD did not alter the cumulative incidence of gallstones. Additionally, there was no significant difference in the risk of gallstones between patients with NAFLD and those with MASLD.

In conclusion, the MASLD diagnostic criteria may be useful for efficiently screening patients at high risk of gallstones. Further, the data on the development of gallstones in patients with NAFLD are equivalent to those in patients with MASLD and can be used after replacing the term NAFLD with MASLD.
Author Contributions:

Shuhei Fukunaga: study concept, design, and statistical analysis; Tomoyuki Nakane: data extraction, interpretation of data, and critical revision of the manuscript; Michita Mukasa: interpretation of data, drafting, and critical revision of the manuscript; Hidetoshi Takedatsu: interpretation of data and critical revision of the manuscript; Takumi Kawaguchi: interpretation of data and critical revision of the manuscript.
References


Figure Legend

Fig. 1. Differences in the cumulative incidence of gallstones between patients with NAFLD and those with MASLD. (A) Venn diagram showing the distribution of patients with hepatic steatosis who fulfilled one or two definitions of NAFLD or MASLD. (B) Cumulative incidence of gallstones in patients with NAFLD and MASLD.

Abbreviations: MASLD, metabolic dysfunction-associated steatotic liver disease; NAFLD, non-alcoholic fatty liver disease.

Figure 1A

Figure 1B

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