Non-alcoholic fatty liver disease in diabetics – prevalence and predictive factors in a multiracial hospital clinic population in Malaysia

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Key words
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Abstract

Background and Aim: There is currently no published study comparing prevalence of non-alcoholic fatty liver disease (NAFLD) and associated factors among diabetics of different ethnicity in the Asia-Pacific region.

Methods: Cross-sectional study of consecutive patients in the Diabetic Clinic in University of Malaya Medical Centre. The Global Physical Activity Questionnaire and a semi-quantitative food-frequency questionnaire were used to assess physical activity and dietary intake, respectively. Diagnosis of NAFLD was ultrasound-based and following exclusion of significant alcohol intake.

Results: Data for 399 patients were analyzed (mean age 62.3 ± 10.5 years, 43.1% men). The racial distribution was Chinese 43.6%, Indian 33.1%, Malay 22.3%, and others 1.0%. The prevalence of NAFLD was 49.6%. On univariate analysis, factors associated with NAFLD were age < 65 years, race, obesity, central obesity, glycated hemoglobin ≥ 7.0%, and elevated serum alanine aminotransferase (ALT) and gamma-glutamyl transpeptidase levels. Patients with low physical activity were more likely to have NAFLD (odds ratio [OR] = 1.67, 95% confidence interval [CI] = 1.06–2.63, P = 0.020). The prevalence of NAFLD was highest among Malays (60.7%), followed by Indians (51.5%), and lowest among Chinese (42.0%) consistent with higher prevalence of central obesity and higher percentage calorie intake from fat in the former groups of patients. On multivariate analysis, independent factors associated with NAFLD were central obesity (OR = 2.20, 95% CI = 1.29–3.75, P = 0.004) and elevated serum ALT level (OR = 1.98, 95% CI = 1.21–3.25, P = 0.007).

Conclusions: NAFLD was seen in half of a cohort of diabetic patients and was independently associated with central obesity and elevated serum ALT level. Prevalence of NAFLD was different and paralleled the difference in prevalence of central obesity and in percentage calorie intake from fat among the different ethnic groups.

Introduction

Non-alcoholic fatty liver disease (NAFLD) is rapidly increasing in the Asia-Pacific region and is estimated to affect up to 30% of the general population. In the only published study on prevalence of NAFLD in the general population from Malaysia, Goh et al. reported a prevalence of 22.7% among individuals attending a health check in a suburban medical facility. The study also reported an inordinately high prevalence of NAFLD among the Malays and Indians compared with the Chinese.

NAFLD is closely associated with diabetes mellitus (DM) and obesity. The prevalence of NAFLD is higher in patients with DM and has been estimated to be between 55% and 70% in previous studies from other parts of the world. The prevalence of NAFLD is even higher among the morbidly obese and has been reported to be over 90%. In Malaysia, the prevalence of DM and obesity has reached epidemic proportions over the years. The Third National Health and Morbidity Survey (NHMS III) estimated the prevalence of DM among adults aged 30 years old and above to have almost doubled from 8.3% in 1996 to 14.9% in 2006. Yet to be published, the Fourth NHMS found that this figure has increased to 20% in 2011. The NHMS III also reported that 43.1% of adult Malaysians were overweight or obese in 2006, almost double that reported 10