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REVIEW

Metabolic correlation and management strategies of non-alcoholic fatty liver disease: An Asian Indian perspective

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Summary Previously believed to be innocuous, non-alcoholic fatty liver (NAFLD) is now known to progress to non-alcoholic steatohepatitis (NASH), hepatic fibrosis and even cirrhosis. NAFLD has emerged as an integral component of the metabolic syndrome, with insulin resistance as the central pathogenic feature. Evidence now suggests that NAFLD is independently correlated to insulin resistance regardless of adiposity. Since, insulin resistance and the metabolic syndrome are widely prevalent in Asian Indians, it is reasonable to presume that NAFLD would also be prevalent, however, data are scarce. Some recent data indicate that hepatic fat content of Asian Indians is almost twice in amount for similar body mass index when compared to white Caucasians. It is important to manage insulin resistance and the metabolic syndrome which underlie NAFLD and NASH. Treatment with insulin sensitizers and some other drugs have shown improvement in hepatic aminotransferase levels and even hepatic histology, but more definite evidence is required for firm recommendation for drug therapy of NAFLD and NASH.

Contents

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Introduction

Previously, fat accumulation in the liver (commonly called fatty liver) was considered to be innocuous. It was considered to be a benign consequence of chronic alcohol intake. In absence of alcohol intake of >20 gm/day, it is termed as non-alcoholic fatty liver disease (NAFLD). It is present in many conditions, but in recent years, its pathogenesis and consequences have been revised. Today it is understood to be an integral part of the metabolic syndrome, which comprises a cluster of abnormalities (dysglycemia, dyslipidemia, hypertension, procoagulant tendency, etc.) with insulin resistance as a central pathogenic factor [1,2]. In advanced stages, hepatic steatosis accompanied by portal inflammation is termed as non-alcoholic steatohepatitis (NASH) which may progress to hepatic fibrosis and even cirrhosis. The pace of research in this area is accelerating; while a PubMed search using the term 'non-alcoholic fatty liver' yielded only 14 research papers in 1995 and 36 in 2000, publications on this topic have accelerated recently (150—200/year during 2004—2006).

The increasing importance of NAFLD as a clinical entity can be assessed from the following facts.

(a) It is the most common cause of raised hepatic aminotransferase levels persisting for 6 months or more in an asymptomatic individual.
(b) It is next only to alcoholic liver disease and chronic hepatitis C as most common reason for referral to a hepatology clinic.
(c) It is a potential cause of cirrhosis leading to end-stage liver disease and rarely even hepatic carcinoma.
(d) It plays a definite role in the pathogenesis and progress of other liver diseases including chronic hepatitis C and alcoholic cirrhosis.

In this short review, we shall describe epidemiology and metabolic correlates of fatty liver with particular reference to Asian Indians. In addition, we shall also review current treatment options.

Epidemiology of NAFLD

Global

Estimates based on imaging and autopsy studies suggest that about 20—30% of adults in the United States and other Western countries have NAFLD [3]. In selected subgroups such as those with obesity or type 2 diabetes mellitus (T2DM), the prevalence varies and may be as high as 75% of the patients.

Asian

The data on the prevalence of fatty liver in Asian populations is limited. Chitturi et al. [4] recently highlighted the potential burden of the disease in the Asian-Pacific area, with estimated 1.8 million Asians with NASH and at least 400,000 Australians with the disease, thus eclipsing the disease burden of hepatitis B and C. In Japan the prevalence of fatty liver was reported to be 3.3 and 3.8% in non-obese and 21.6 and 18.8% in obese males and females, respectively [5]. In a hospital-based study in Taiwan the prevalence of fatty liver was 36.9%, being higher in men than in women [6].

The prevalence data from Indian are depicted in Table 1. In a hospital-based study from north India, NASH was observed to be present in 25 subjects (including 24 men) out of 52 patients with persistently elevated levels of serum aminotransferases [8]. According to our data from north India the prevalence of NAFLD was 32.2% (Misra A, unpublished data). In a small series of 65 patients of NASH,