

Cardiovascular risk milieu in nonalcoholic fatty liver disease

Nonalcoholic fatty liver disease (NAFLD) is a major public health problem throughout the world. In the Western World, it currently is the second most common cause for listing for liver transplantation. NAFLD is broadly categorized into nonalcoholic fatty liver (NAFL) which generally benign hepatically and nonalcoholic steatohepatitis (NASH) which can progress to cirrhosis and liver failure. Adverse hepatic consequences of NAFLD (primarily from NASH) such as cirrhosis, liver failure, and liver cancer are well recognized, but non-so-well recognized is fact that the cardiovascular disease is the single most common cause of death in patients with either NAFL or NASH. Patients with NAFLD are heavily enriched with traditional cardiovascular risks such as obesity, type2 diabetes, and dyslipidemia. Recent publications highlighted the high prevalence of atherogenic dyslipidemia which is characterized by marked abnormalities in the characteristics of various lipoproteins. It is now evident that NAFLD and NASH are associated with a procoagulant state characterized by abnormal levels of clotting factors such as factor VIII, vWF, protein C, and antithrombin III. Additionally, there is clear cut evidence for high prevalence of significant endothelial dysfunction in individuals with NAFLD and NASH. Combined, these atherogenic dyslipidemia, procoagulant and proinflammatory state, and endothelial dysfunction create a

milieu that is very high risk for cardiovascular morbidity and mortality in individuals with NAFLD and NASH. Improving these abnormalities may improve cardiovascular outcomes in patients with NAFLD and NASH.