www.medscape.com

Is the Prevalence of NASH Really Rising?

William F. Balistreri, MD

Posted: 07/27/2012

Question

I am seeing an increase in referral of patients with suspected fatty liver disease. Is the apparent rising prevalence of NASH real?

Response from William F. Balistreri, MD
Professor of Medicine, University of Cincinnati College of Medicine, Cincinnati, Ohio; Staff Physician, Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio

You are not alone. There is, indeed, significant nationwide concern about the rising incidence and impact of obesity-related liver diseases: nonalcoholic fatty liver disease (NAFLD) and nonalcoholic steatohepatitis (NASH).

NAFLD has become the leading cause of liver disease in North America, as a result of the rapidly increasing prevalence of obesity.[1,2] However, accurate population-based data on the incidence of NAFLD and NASH are sparse, in part because the diagnosis requires histopathologic documentation.

In a study presented at Digestive Disease Week (DDW) 2012, the temporal trend in the prevalence of NASH in one US county (Olmstead, Minnesota) between 1981 and 2010 was reported.[3] In a review of 555 autopsy records from this county, investigators noted a significant increase over the past 30 years in mean body mass index and the prevalence of obesity. Striking increases in the prevalence of steatosis and NASH were found. Among persons who were obese, the prevalence of steatosis increased from 23% in the 1980s to 49% in the 1990s and to 60% in the most recent era. Even in nonobese patients, the prevalence of steatosis increased from 12% (1980s) to 27% (1990s) to 36% (today).

In a related study, investigators examined trends in the prevalence of NAFLD in children and adolescents over the past 20 years.[4] The investigators used nationally representative data from the National Health and Nutrition Examination Survey data sets, spanning 1988-2008. More than 10,000 adolescents were included in this analysis. The proportion of adolescents who were obese increased from 11% to 21% over this 20-year period. Suspected NAFLD increased from 4% to 10%. Among obese adolescents, the prevalence of elevated aminotransferase levels increased 120%, from 17% to 37%.

The bottom line of these 2 studies is that NAFLD and NASH are increasing in prevalence in all age groups in the United States. NAFLD may now affect more than one half of all adults and at least 10% of adolescents. Of note, the increase in NAFLD in adolescents was not solely defined by the number of overweight patients; the increased prevalence of NAFLD was much greater than the increase in the prevalence of obesity. These data strongly support recommendations to screen for obesity-related liver diseases in obese adults and adolescents, at a minimum.

This raises the question of whether there is a reliable noninvasive test to screen for fatty liver disease and specifically to diagnose NASH. Several studies presented at DDW 2012 indicate that this is possible, to a degree, using serum biomarkers of hepatocyte apoptosis and oxidative stress.[5,6] Circulating markers of hepatic cell death -- cytokeratin 18 fragments and soluble Fas (Fas ligand) -- were shown to be useful for screening and diagnosis. In a validated prediction model, the combination of these markers had superior diagnostic performance for detecting NASH compared with measurement of the individual markers. In addition, newer MRI techniques, such as

measurement of the proton-density fat fraction, correlate with histology-determined steatosis grade in adults with NAFLD. However, another study reported at DDW 2012 documented that the amount of hepatic steatosis on imaging does not necessarily correlate with the severity of the liver disease, and steatosis is not linearly related to disease progression.[7]

Future studies will need to further validate screening methods for these increasingly common liver diseases and document whether novel imaging or MRI techniques can be used as noninvasive methods to study disease progression by fat mapping and changes in fat distribution over time.

References

1. Younossi ZM, Stepanova M, Afendy M, et al. Changes in the prevalence of the most common causes of chronic liver diseases in the United States from 1988 to 2008. Clin Gastroenterol Hepatol. 2011;9:524-530. Abstract
2. Singh GK, Kogan MD, Van Dyck PC. Changes in state-specific childhood obesity and overweight prevalence in the United States from 2003 to 2007. Arch Pediatr Adolesc Med. 2010;164:598-607. Abstract
3. Lee YS, Evans A, Kim D, et al. Prevalence of fatty liver disease: a community-based autopsy study. Program and abstracts of Digestive Disease Week 2012; May 19-22, 2012; San Diego, California. Abstract 1054.
4. Vos MB, Welsh J. Prevalence of suspected NAFLD is increasing among U.S. adolescents. Program and abstracts of Digestive Disease Week 2012; May 19-22, 2012; San Diego, California. Abstract 705.
5. Alkhouri N, Abu-Rajab Tamimi TI, Yerian L, et al. Prospective evaluation of the combination of markers of hepatocyte apoptosis and oxidative stress in identifying nonalcoholic steatohepatitis. Program and abstracts of Digestive Disease Week 2012; May 19-22, 2012; San Diego, California. Abstract 933.
6. Shen J, Chan HL, Wong G, et al. Non-invasive diagnosis of non-alcoholic steatohepatitis by combined serum biomarkers. Program and abstracts of Digestive Disease Week 2012; May 19-22, 2012; San Diego, California. Abstract 936.
7. Permutt Z, Le TA, Peterson MR, et al. Correlation between liver histology and novel magnetic resonance imaging in adult patients with nonalcoholic fatty liver disease. Program and abstracts of Digestive Disease Week 2012; May 19-22, 2012; San Diego, California. Abstract 1028.