**SUN-606: Identification of NASH Using Data from NHANES III**

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Nonalcoholic steatohepatitis (NASH) is a serious liver condition marked by hepatic steatosis (HS), cell damage and inflammation. Patients with NASH are at risk for developing cirrhosis and hepatic cancer. Currently, the definitive method of diagnosing NASH is by liver biopsy. To avoid the costs and risks associated with biopsy procedures, there has been considerable effort to develop a non-invasive method of identifying patients with NASH. However, none of these methods has become accepted as a "gold standard."

Our objective was to compare three non-invasive methods of identifying NASH by using data from NHANES III (1988-1994) to determine variables associated with published formulas to identify NASH. We used ultrasound data to identify subjects with moderate - severe HS. Among those with HS, we identified the NASH population using either the HAIR score, the NASH liver fat score, or the Gholam score. The HAIR score was developed in a sample of obese patients, is based on hypertension, insulin resistance and alanine transaminase (ALT) levels, and had an AUROC of 0.9, a sensitivity of 0.8, and a specificity of 0.89. The NASH liver fat score was developed in a Finnish population undergoing gastric bypass, and validated in an Italian population of liver biopsy patients. This score incorporates metabolic syndrome, type 2 diabetes, serum insulin, AST, and ALT. In the Finnish and Italian populations, respectively, it had AUROCs of 0.73 and 0.74, sensitivities of 59.5 and 92.9, and specificities of 79.7 and 32.7. The Gholam score was developed in a sample of obese patients and uses aspartate aminotransferase (AST) and type 2 diabetes diagnosis. It had an AUROC of 0.82, a sensitivity of 0.76, and a specificity of 0.66. We performed multinomial logistic regression to compare each NASH population to the normal population (those with no or only mild HS).

We identified 1236 subjects as having NASH by at least one method. 18% of these were identified by all 3 methods, while 20% were identified by 2 methods. All three methods identified significant risk factors for NASH ($p<0.05$) as being overweight or obese, having elevated AST or ALT levels, and having elevated C-peptide, serum glucose, or serum triglyceride levels. However, the HAIR and Gholam methods also identified being Mexican-American as a significant risk factor, with the NASH liver fat score did not. Being a former alcohol drinker and not meeting guidelines for physical activity were significant risk factors when using the NASH liver fat score. Further refinement of a noninvasive method for identifying NASH is required. Considerable care must be taken in interpreting risk factors, because the results differ depending which method is used. This could have implications in clinical practice as well, where patients and their risk factors may be mis-identified if formulas are used and not liver biopsy.