Sarcopenia associated with non-alcoholic fatty liver disease (NAFLD) and fibrosis among adults in the united states: National health and nutrition examination survey (NHANES 2017–2018)

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Background NAFLD and sarcopenia are common diseases affecting adult populations, constituting a major healthcare burden. The aim of this observational study is to explore associations between sarcopenia, NAFLD and stiffness, and to provide insights on prevention strategies targeted at these diseases.

Methods Subjects between 20-60 years were recruited from NHANES 2017–2018; those with alcohol abuse, underlying liver diseases and pregnancy were excluded. Dual energy X-ray absorptiometry scan was applied for the measurement of appendicular lean mass (ALM). Sarcopenia was defined as a ratio of ALM/BMI below 0.789 for male, and 0.512 for female. NAFLD was determined using liver ultrasound transient elastography. Subjects with control attenuation parameter (CAP) via liver ultrasound transient elastography. Mean values of Se intake and serum Se, tHg and MeHg were calculated; univariate and multi-variate linear regressions were conducted between CAP and Se intake, serum Se, tHg and MeHg, respectively with covariates of gender, age, ethnicity, tobacco smoke, BMI, educational level and average household income.

Results Mean±SD for Se intake was 101.9±78.0 mcg, serum Se 2.4±0.33 nmol/L, serum tHg 5.6±11.4 nmol/L, serum MeHg 4.6±9.8 nmol/L, Se:tHg molar ratio of 1.1±0.8, Se:MeHg molar ratio of 1.5±1.0. The mean CAP was 257±66.2 dB/m. Univariate linear regression showed a positive association between CAP and Se intake (r=0.037, p<0.01), serum Se (r= 19.7, p<0.001), Se:MeHg molar ratio (r= -0.9, p<0.001), Se:tHg molar ratio (r= -2.8, p<0.001), respectively. After adjustment, associations between CAP and serum MeHg (r= 0.14, p<0.05), serum Se (r=13.8, p<0.001) remained statistically significant, but the associations with the molar ratios no longer existed.

Conclusions Our results suggested that Se was associated with a decreased risk of NAFLD, whereas tHg and MeHg do not necessarily increase the disease risk. The molar ratios may present as early biomarkers for the prediction of NAFLD risk.

The effect of curcumin supplement among overweight/obese non-alcoholic fatty liver disease (NAFLD) patients

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Background Natural curcumin has been the subject of research for the treatment of Non-Alcoholic Fatty Liver Disease (NAFLD) due to antioxidant, anti-inflammatory, insulin-sensitizing, anti-steatotic, anti-fibrotic properties and affordable price. However, there are still scarce data about its benefit in a clinical setting.

Methods This is a retrospective study from the outpatient medical record, starting from 2nd January 2019 to 30th April 2020. Patients who diagnosed as fatty liver by ultrasonography (USG), body mass index (BMI) >23 kg/m², received curcumin supplement daily for at least one month, non-alcoholic, elevated alanine aminotransferase (ALT), hypercholesterolemia, without comorbidities (such as diabetes mellitus, viral hepatitis, heart failure, nephrotic syndrome, infection case, kidney failure) were included for analysis. The primary outcomes are improvement of ALT level and regression of fatty liver by USG.

Results There were 48 patients who fulfilled the inclusion criteria. All of these patients were diagnosed as fatty liver (14 patients grade 1 and 34 patients grade 2 by USG) with elevated alanine aminotransferase (ALT), hypercholesterolemia, without comorbidities (such as diabetes mellitus, viral hepatitis, heart failure, nephrotic syndrome, infection case, kidney failure) were included for analysis. The longest treatment duration recorded was 6 months. Seventy-seven percent of patients (37/48) showed improvement/regression of fatty liver in USG. Thirty-one percent of patients (42/48) showed normal ALT levels after 6 months treatment (p<0.05). However, only twelve percent of patients (6/48) showed improvement/regression of fatty liver in USG after 6 months of treatment (p>0.05). There were no significant changes in BMI pre and post-treatment duration.

Conclusions Curcumin supplements may improving ALT level but have minimal effect on steatosis regression in overweight/obese NAFLD patients. A randomized controlled clinical study is still needed to confirm the efficacy of curcumin in NAFLD.