Genotype Specific Peripheral Lipid Profile Changes with Hepatitis C Therapy

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Information on the Scientific Research Project:

1. What did this study explore?
   Clearance of Hepatitis C Virus (HCV) with direct acting antiviral (DAA) therapy alters peripheral metabolic pathways. Genotype specific peripheral lipid changes during DAA therapy are uncharacterized. We aim to evaluate changes in peripheral lipids from initiation to end of treatment (ETR) and association of HCV genotype with direction/magnitude of lipid profile change in a HCV cohort treated with DAAs.

2. How did the authors perform all experiments?
   Approval from our institutional review board was obtained. Mono-infected patient with hepatitis C were treated with DAAs at a university-based liver clinic were prospectively enrolled. Baseline demographics included age, ethnicity, hypertension, diabetes, hyperlipidemia, treatment regimen, and fibrosis stage. Total cholesterol (TCHOL), high density lipoprotein (HDL), low density lipoprotein (LDL), triglycerides (TG), and liver function tests were measured

prior to treatment and ETR.

3. How did the authors process all experimental data?
   Changes in lipid and liver functions were evaluated by subgroups broken down by genotype. Mean differences were calculated for each lipid profile and liver function component (direction/magnitude). The mean differences in lipid profiles were then compared between genotypes for differences in direction/magnitude. Lipid profile and liver function changes were evaluated with Levene's test and student's t test. Mean differences were compared between genotypes using ANOVA, post-hoc analysis via the Bonferroni correction or Dunnett T3.

4. How did the authors deal with the pre-study hypothesis?
   Hepatitis C genotype 3 infection to a greater degree than other genotypes is associated with an increased incidence and severity of hepatic steatosis independent of any co-existing insulin resistance or obesity. It is also more strongly associated with hypocholesterolemia than other genotypes. Our pre-study hypothesis was that after treatment, genotype 3 would have the greatest change in lipid panels. In the end, we found successful DAA therapy results in increases in TCHOL, LDL, and HDL and decrease in TG, particularly in GT1/GT3, with changes being most pronounced in GT3.

5. What are the novel findings of this study?
   Relatively little is known about the different effect of genotypes on the magnitude of lipid profile changes from start to end of treatment. Our study is the first to compare mean differences in lipid profile components between GT1, GT2, and GT3 after treatment with DAAs. Patients with GT3 had the most profound changes in lipid profile, characterized by a significantly greater increase in total cholesterol than both GT1 and GT2 across the entire population.

This was also reflected in our cirrhotic and non-cirrhotic subgroups, and occurred with congruent improvements in liver function of all genotypes.