Estimating changes in liver fibrosis over time and in specific subgroups with transient elastography (TE)

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Abstracts Presented:

2 abstracts were submitted on June 1, 2018 for consideration for poster or oral presentation at the American Association for the Study of Liver Diseases 2018 annual meeting in San Francisco:

1.) Longitudinal Change in Liver Stiffness Among Patients with Hepatitis C
2.) Variability in Liver Stiffness Measurements Among Patients with Viral Hepatitis

Background:

With the advent of highly effective direct-acting antiviral (DAA) agents, several studies have utilized transient elastography to evaluate longitudinal changes in liver stiffness (LS) among patients with chronic hepatitis C (CHC) infection. However, most are limited to the duration of therapy or the 12-48 weeks post-treatment. As guideline-directed treatment of CHC with DAAs becomes widespread, along with the use of serial LS measurements to monitor disease progression, understanding factors leading to differential changes in LS will be integral to refining clinical decisions regarding management and surveillance for complications of end-stage liver disease.

Objective:

To examine changes in LS measured by transient elastography in a large, racially diverse cohort of U.S. patients with CHC infection.

Methods:

We conducted an observational study of patients with confirmed CHC infection seen at Johns Hopkins and Kaiser Permanente Mid-Atlantic States between 4/01/2014 and 3/31/2018. Baseline was defined at the time of the first LS measurement. We required patients to be treatment naïve at the time of the first LS measurement and to have at least two LS measurements. We used linear regression to measure the change between the first and last LS measurement - accounting for treatment; baseline age, LS, diabetes, HIV and HCV viral load; race; sex; and smoking status.

Results to Date:

Of 839 patients, 51% initiated treatment with a DAA. The mean (SD) time between first and last LS measurement was 13.68 (7.26) months among those initiating treatment; and 12.90 (6.91) months among those who were untreated. We observed no significant change in LS over time

among the treated (0.05; 95% CI: -0.05, 0.15) or untreated (-0.02; 95% CI: -0.13, 0.08). In a multivariable model, only baseline LS was an independent predictor (-0.56; 95% CI: -0.74, -0.39). However, we did not observe a differential effect of treatment on change in LS by cirrhosis status (kPa ≥ 12) at baseline. These results were robust for an analysis of change in Metavir fibrosis score. We observed a high amount of variability in LS measurements among those with cirrhosis at baseline (Figure 1).

Conclusions to Date:

Higher baseline LS was independently associated with a greater decline in LS over time. A high level of variability in LS among patients with baseline cirrhosis and short follow-up may have prevented us from observing a change in LS between treated and untreated patients with CHC. Long-term prospective studies are needed to evaluate liver fibrosis progression in distinct populations.

Figure 1. Distribution of Baseline Liver Stiffness Measurements and Change in Liver Stiffness Measurements in Patients with Chronic HCV Infection.