factors have been associated with the presence of HTPR in patients with CAD and PAD, including CYP2C19 loss of function polymorphism, drug-drug interactions, and medical comorbidities. Gender differences are another factor that might influence the levels of platelet inhibition while on Clopidogrel and hence, HTPR. Differences by Gender exist in platelet biology, count, and activation. The evidence for the influence of Gender in HTPR is limited, but a possible association has been described. In this study, we described the association of Gender with HTPR and Major Adverse Cardiovascular Events (MACEs) occurrence. The data is from a sample of Hispanic-Caribbean patients on Clopidogrel therapy alone or in combination with Aspirin that were retrospectively evaluated from an ongoing trial in Puerto Rico. The result of this study provided evidence of the influence that Gender has on antiplatelet therapy function and MACEs occurrence. METHODS/STUDY POPULATION: The population in the study consisted of Hispanic-Caribbean patients using Clopidogrel alone or in combination with Aspirin for coronary artery disease, peripheral arterial disease, or cerebrovascular disease. The sample was obtained from multiple hospital institutions with cardiovascular services in Puerto Rico during the years 2016-2019. Patients were part of the ongoing trial, “Adopting a precision medicine paradigm in Puerto Rico: leveraging ancestral diversity to identify predictors of Clopidogrel response in Caribbean Hispanics.” The sample size consisted of 150 patients. Participants were recruited during routine medical care, pre-admission evaluation for elective cardiac procedures, or during hospitalization in the participating institutions. Platelet reactivity testing was performed with the system Verify Now® to determine PRU values, and High on-treatment platelet reactivity was defined as PRU ≥208. One year after recruitment, the patients were re-evaluated for the occurrence of MACEs. The association of the variables HTPR, occurrence of MACEs, and Gender were assessed using logistic regression in addition to the role of HTPR and Gender for predicting MACE occurrence. The analysis was done using the statistic software Intellectus ©.

RESULTS/ANTICIPATED RESULTS: The sample consisted of 67 females and 83 males with and Mean age of 67.87 years and 61.11 years, respectively. The prevalence of HTPR in the sample was 32.67% (n = 49) with 36% (n = 24) for females, and 30% (n = 25) for males. The mean PRU values were 179.54 for females and 170.81 for males. The percentage of MACEs one year after recruitment was 29.33% (n = 44) with 43% on females (n = 19), and 57% on males (n = 25). Logistic regression for Gender predicting HTPR was non-significant with a $\chi^2(2) = 0.55$, $p = .758$, and McFadden $R^2 = 0.00$. Also, logistic regression for the effects of Gender and HTPR on the Odds of MACEs occurrence was not significant based on a model with an alpha of 0.05, $\chi^2(2) = 1.99$, $p = .370$, and McFadden $R^2 = 0.01$.

OBJECTIVES/GOALS: The detection of liver fibrotic changes at an early and reversible stage is essential to prevent its progression to end-stage cirrhosis and hepatocellular carcinoma. Liver biopsy, which is the current gold standard for fibrosis assessment, is accompanied by several complications due to its invasive nature in addition to sampling errors and reader variability. In this study, we evaluate the use of quantitative parameters extracted from hybrid ultrasound and photoacoustic imaging to detect and monitor fibrotic changes in
a DEN rat model. METHODS/STUDY POPULATION: Liver fibrotic changes were induced in 34 Wistar male rats by oral administration of DiethylNitrosamine (DEN) for 12 weeks. 22 rats were imaged with B-mode ultrasound at 3 different time points (baseline, 10 weeks and 13 weeks) for monitoring liver texture changes. Texture features studied included tissue echointensity (liver brightness normalized to kidney brightness) and tissue heterogeneity. 12 rats were imaged with photoacoustic imaging at 4 time points (baseline, 5 wks, 10 wks, and 13 wks) to look at changes in tissue oxygenation. Hemoglobin oxygen saturation (sO2A) and hemoglobin concentration (HbT) in the right and left lobes of the liver were measured. 8 rats were used as controls. Liver tissue samples were obtained following 13 weeks from DEN start time for METAVIR histopathology staging of fibrosis. RESULTS/ANTICIPATED RESULTS: Texture features showed an increase with time in DEN rats. Normalized echointensity increased from 0.28 ± 0.06 at baseline to 0.46 ± 0.10 at 10 weeks (p < 0.0005) and 0.53 ± 0.15 at 13 weeks in DEN rats (p < 0.0005). In the control rats, echointensity remained at an average of 0.25 ± 0.05 (p = 0.31). Tissue heterogeneity increased over time in the DEN-exposed rats from a baseline of 208.7 ± 58.3 to 344.6 ± 52.9 at 10 weeks (p < 0.0005) and 376.8 ± 54.9 at 13 weeks (p = 0.06) however it stayed constant at 225.7 ± 37.6 in control rats (p = 0.58). The quantitative analyses of the photoacoustic signals showed that blood oxygen saturation significantly increased with time. At 5 weeks sO2AvT increased by 53.83 % (± 0.25), and HbT by 35.31 % (± 0.07). Following 10 weeks of DEN; sO2AvT by 92.04 % (± 0.29), and HbT by 55.24 % (± 0.1). All increases were significant p < 0.05. In the 13th week, however, the values of all of these parameters were lower than those in the 10th week, however, the decrease was statistically insignificant. DISCUSSION/SIGNIFICANCE OF IMPACT: Quantitative features from B-mode ultrasound and photoacoustic imaging consistently increased over time corresponding to hepatic damage, inflammation and fibrosis progressed. The use of this hybrid imaging method in clinical practice can help meet the significant need for noninvasive assessment of liver fibrosis.