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Increases in hepatic elasticity/stiffness occur in parallel with plasma measures of proteoglycans, cellular adhesion disruption and a coagulopathy

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Background: Cellular adhesion and extracellular matrix (proteoglycans/coagulation modulators) are crtical for hepatic structural integrity.

Hypothesis: Hepatic elasticity and stiffness, increase in parallel with plasma levels of proteoglycans, evidence for cellular adhesion disruption and a coagulopathy.

Methods: Subjects include, a total of 44 individuals with liver disease were included in the study. 12 had either Nash or alcoholic liver disease and 32 had viral liver disease [hepatitis C (n=28) or hepatitis B (n=4)]. Clinical parameters assessed include a complete blood count, complete metabolic profile, prothrombin time, activated partial thrombin time, C-reactive protein, alpha-fetoprotein, thrombin time, and DRVVT. Research parameters assessed include endocan, glypican-3 (2 proteoglycan putative markers of neoplastic disease) and NCAM-2 (an itigrin/adhesion molecule) inhibitor. Hepatic elasticity and stiffness were determined at a minimum of 3 sites per subject, utilizing the Aixplorer multi-wave ultrasound apparatus and the value for each site and the mean value for each patient were determined.

Results: Results include: The values for prothrombin time ($r=0.772$) and aPTT ($r=0.698$) increased as a function of hepatic stiffness ($p<0.01$); the values for prothrombin time ($r=0.600$) and aPTT ($r=0.564$) increased as a function of hepatic elasticity (both $p<0.05$); endocan and glypican (2 putative tumor markers) and DRVVT (a biomarker of antiphospholipid activity) increased with hepatic elasticity (all $p<0.05$); these findings as well as the values for thrombin time were strongest for the group of individuals with Nash/ alcoholic liver disease (all <0.05); the values for endocan and thrombin time correlated with hepatic elasticity and stiffness in the group of 32 with viral liver disease ($p<0.05$); plasma NCAM-2, a homolog of ICAM-I, an adhesion ligand for LFA-1, increased as did hepatic elasticity and stiffness ($p<0.05$).

Conclusion: Plasma measures of soluble proteoglycans, cellularity adhesion disruption and a minor coagulopathy increase in parallel with hepatic elasticity and stiffness.

Biography

D Van Thiel obtained his MD from the University of California at Los Angeles and completed his Internal Medicine residencies at Cornell University Hospitals and Boston University. He completed a Gastrointestinal/Hepatology fellowship at Boston University and the University of Pittsburgh. At the latter institution, he progressed from an Instructor of Medicine to Professor of Medicine and Director of the Gastroenterology Hepatology Program and served as the medical Director of Liver transplantation. He has published more than 100 peer reviewed papers in a variety of journals and is on the Editorial Board of several journals as well as serves as a reviewer.

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