Dynamic fibrosis features in HCV post-treatment liver biopsies and its interpretation

Feng LIU[1], Elaine Lay Khim CHNG[2], Dean Tai[2], WEE Aileen[3], Yayun REN[2], Rui HUANG[1], Jian WANG[1], BEDOSSA Pierre[4], Lai Wei[5], Huiying RAO[1*] * Correspondence author

1. *Peking University Hepatology Institute, Peking University People's Hospital Beijing Key Laboratory of Hepatitis C and Immunotherapy for Liver Diseases, Beijing 100044, China; 2.Histoindex Pte. Ltd., Singapore; 3.Department of Pathology, Yong Loo Lin School of Medicine, National University of Singapore, National University Hospital, 5 Lower Kent Ridge Road, Singapore 119074, Singapore. 4. LiverPat SAS, France; 5. Hepatopancreatobiliary Center Beijing Tsinghua Changgung Hospital, Tsinghua University, Beijing, P.R. China.*

PREMISE

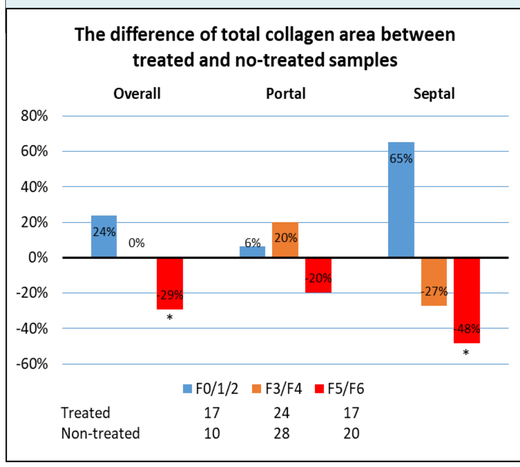
Complex hepatic fibrosis patterns comprising progressive and regressive features are often observed, particularly in post-intervention samples. These dynamic fibrosis features are not specifically/adequately documented with conventional staging systems. The objective is to examine the heterogeneity of fibrosis features in pre- and post-treatment liver samples and its impact on fibrosis regression evaluation.

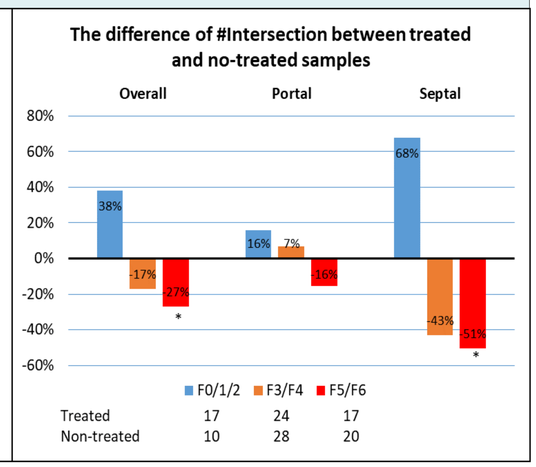
METHODS

Paired pre- and post-treatment liver biopsies from 58 HCV patients were staged (Ishak system) by independent and blinded pathologists. Fibrosis features, such as total collagen area and number of collagen intersections (#intersection), were measured in portal and septal compartments by qFibrosis.

RESULTS

For biopsies showing stages F5/6, the treated cases revealed significantly less total collagen area (48%) and #intersections (51%) across all compartments as compared to the non-treated biopsies. This indicates significant fibrosis reduction, such as septal thinning, in the treated cases despite being accorded F5/6 by conventional staging definitions. For the F0/1/2 cohort, more total collagen area (65%) and #intersection (68%) were observed in the treated cases, which could suggest residual fibrosis from more advanced fibrosis stages with breaking-up of septa.





CONCLUSION

The paired HCV biopsies provide quantitative evidence for heterogeneity of fibrosis features which are the mainstay of histological scoring systems. There is a need to evaluate the finer aspects of regression. We propose an integrated semiquantitative scoring and quantitative qFibrosis approach for enhanced staging of fibrosis regression.

ACKNOWLEDGEMENTS

This work was supported by Beijing Natural Science Foundation (7182174), and the China National Science and Technology Major Project for Infectious Diseases Control during the 13th Five-Year Plan Period (2017ZX10202202).