Validation Of Replacement Of Transient Elastography (Fibro Scan) With Combination Of Cheap And Readily Available Biomarkers And Development Of Novel Fibrosis Index (NFI).

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Background:

Hepatitis C is frequently associated with liver fibrosis, cirrhosis and cirrhosis associated complications. In this study, we collated cheap and readily available non-invasive bio-markers, liver fibrosis indices and fibro scan score for the assessing fibrosis stage and predicting its progression in population of Pakistan.

Methods:

This prospective cross-sectional study was done at Hepatitis clinic of LGH/AMC, Lahore from 11th Feb 2017 to Dec 29, 2018. We studied on 1898 HCV infected patients confirmed by presence of HCV RNA in their serum. Fibro scan was then performed for staging of fibrosis. To differentiate progression of fibrosis, we compared the prognostic effectiveness of fibro scan score (Liver Stiffness Index, LSI) and fibrosis indices; AAR (AST to ALT Ratio), APRI (AST to Platelet index),FI (Fibrosis Index), FIB-4 (Fibrosis-4), API (Age to Platelet index) , Pohl score, FCI (Fibrosis Cirrhosis Index) ; the fibrosis stage assessments were compared. Already developed fibrosis indices were tested and we also developed a new index for predicting stages of fibrosis naming it as Novel Fibrosis Index (NFI).

$$NFI = \left[\frac{Bilirubin \times (ALP)2}{Platelet\ Count\,(Albumin)2} \right] - n$$

Where n= 2000 and "n" is constant that is introduced to accommodate measurement in small values that is more convenient to use.

Results:

Readily available serum indices AAR,APRI,FI, FIB-4, API, Pohl score and FCI were able to predict fibrosis stage with correlation coefficient indices 0.848,0.711, 0.003, 0.618, 0.741, 0.529, 0.360 and 0.477 respectively. Our Novel Fibrosis Index's (NFI) spearmen coefficient was found to be 0.26.ROC curves analysis showed considerable sensitivity and specificity for these serum biomarkers including NFI in correlation to fibro scan score.

Comparative ROC Curves of NFI with all other serum indices in different stages of fibrosis in hepatitis C:
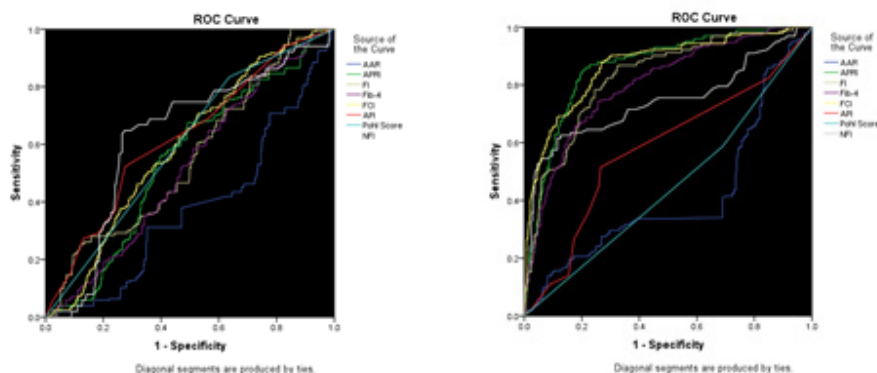
Conclusions:

Readily available and cheap serum indices AAR,APRI,FI, FIB-4, API, Pohl score and FCI predicted late stages of fibrosis in co-relation to the costly and less accessible Fibro scan with considerable accuracy a. Our Novel Fibrosis Index (NFI) predicted fibrosis stages F3 and F4 with considerable sensitivity and specificity as compared to all other indices.

Biography

Azhar Hussain, a gold medalist, student of 3rd year MBBS, has his expertise in elucidating major modifiable risk factors of hepatitis i.e. BMI, Perceived Stress (PS), Drugs and life style .Recently, he is working on different aspects of cirrhosis associated hypotension like relationship with fibroscan score, PCR, ELSA and different genotypes of hepatitis C. He has also developed his own Novel Fibrosis Index (NFI) for staging fibrosis in hepatitis C.

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