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THE INFLUENCE OF INFLAMMATION ON LIVER STIFFNESS - A STUDY IN ACUTE HEPATITIS

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Background and objectives: Liver stiffness measurement by transient elastography (Fibroscan®) is currently used to quantify the degree of liver fibrosis. The elasticity of the liver can also be influenced by other factors, such as inflammation, edema, necrosis and steatosis, and if these factors exist, their contribution in the result of the investigation is hard to establish. This study aims to compare the characteristics of the same liver in different conditions: during extensive inflammation (acute hepatitis) and resolution period.

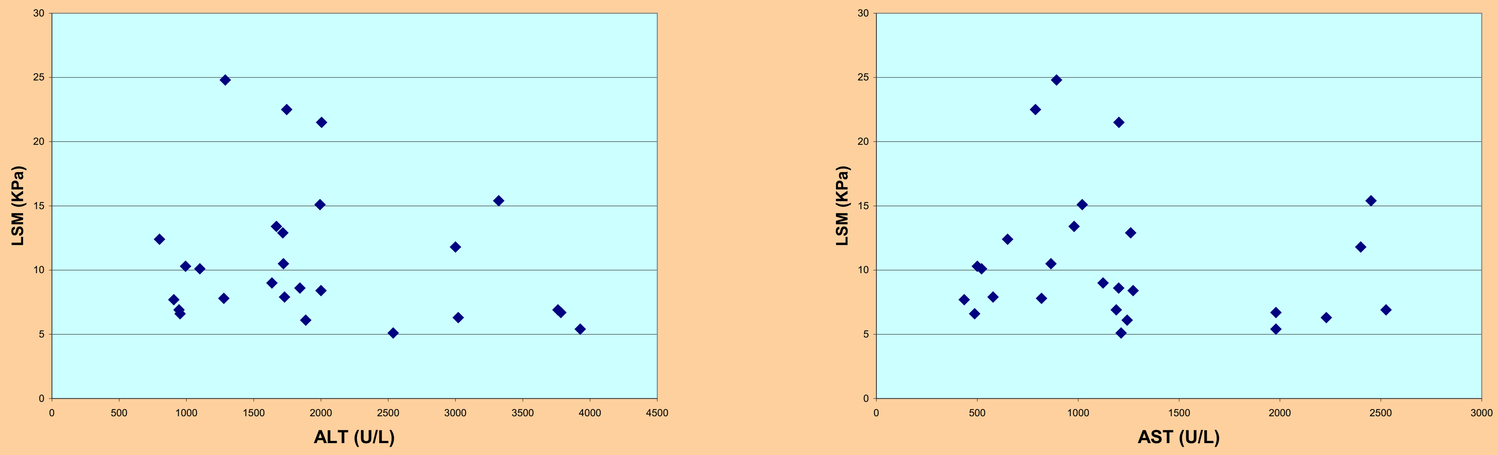
Methods: 26 patients with acute hepatitis (10 with A hepatitis and 16 with B hepatitis) were included. The patients were monitored until ALT levels became < 2 x ULN. Fibroscan was performed at 3 time points: at presentation, 14 days later and when ALT was < 2 x ULN. At the same points, ALT, AST and bilirubin were tested. None of the patients had any previously known liver disease.

Results: The mean age of the patients was 28.5 (+/- 6.73) years.

At presentation, 61% of the patients had liver stiffness values of over 7.2 KPa (usually consistent with significant fibrosis), while during resolution only 11% had this high values. 5/26 patients at presentation had liver stiffness of over 15 KPa, values usually considered significant for cirrhosis; only 2/26 patients had normal values - below 5.5 KPa (both with VHA).

Descriptive statistics

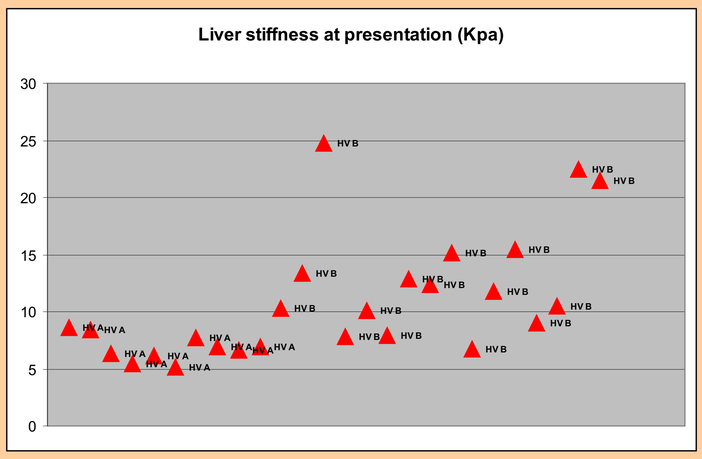
Parameter	Values
Age (years)	28.5 ±6.73
Male gender (number)	14
BMI (kg/m^2)	22.59±3.29
VHA (number)	10
ALT at presentation (U/L)	1737±945.25
AST at presentation (U/L)	1156±644.38
Total bilirubin at presentation (mg/dl)	6.36±3.8
ALT at last exam (U/L)	44±21.27
AST at last exam (U/L)	52±22.2
Total bilirubina at last exam (mg/dl)	0.8±0.2

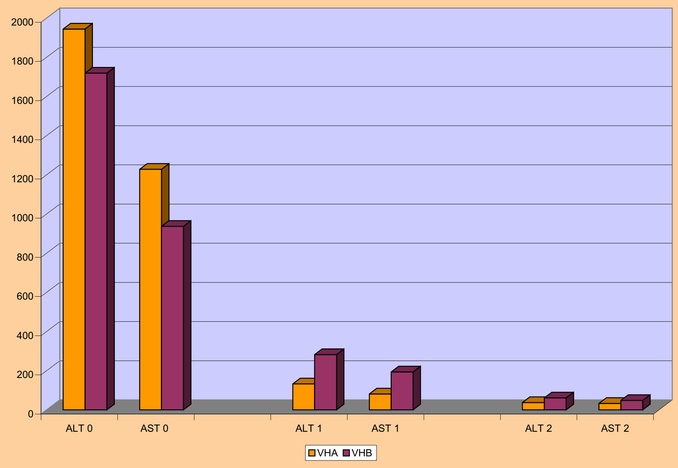


Relationship between ALT / AST and LSM at presentation (no correlations found)

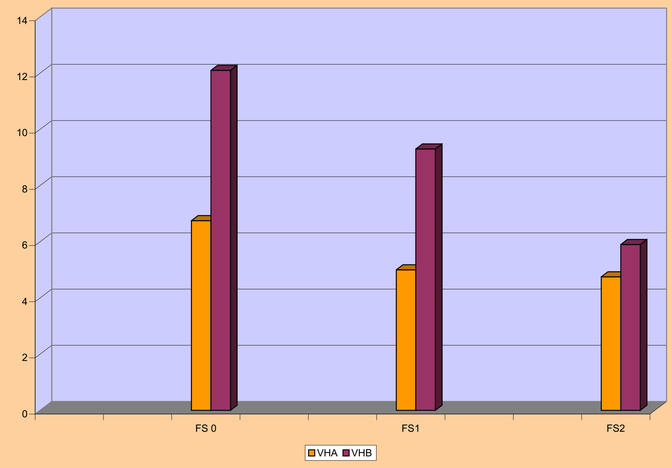
At presentation, liver stiffness (LSM) was only influenced by etiology, not by ALT, AST or bilirubin level, being significantly higher in acute B hepatitis than in A hepatitis (p=0.001, r=0.6). The stiffness values decreased in parallel with the decrease of ALT during the monitoring period, and they became correlated with ALT at the last two evaluations (p=0.001, r=0.61 and respectively r=0.751). Liver stiffness at peak increase of ALT may be a good indicator of the disease progression as it is statistically significant correlated with ALT and AST values at 14 days after admission (p=0.004, r=0.543 and p=0.001, r=0.623).

No differences regarding ALT, AST and bilirubin levels, were found between the two etiologies at admission.





Evolution of median ALT and AST at the 3 time points (Presentation, 14 days later and TGP<2xULN)



Evolution of median liver stiffness at the 3 time points (Presentation, 14 days later and TGP<2xULN)

Conclusions: Liver stiffness is influenced by inflammation, but not always correlated with ALT or AST levels.
In acute hepatitis B, at presentation, liver stiffness was significantly higher than in A hepatitis, regardless of ALT levels.
Liver stiffness at admission may be a predictor of the evolution of the hepatitis as its values are correlated with ALT levels found 14 days after.

Disclosure: Nothing to disclose.