



CODEN [USA]: IAJ PBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**Available online at: <http://www.iajps.com>

Research Article

**AN ASSESSMENT OF LIVER STIFFNESS MEASUREMENTS
INFLUENCING FACTORS AMONG HEPATITIS B INFECTED
PATIENTS THROUGH FIBRO SCAN**¹Dr. Aroosa Ishaque, ²Dr. Alia Iftkhar, ³Dr. Sahar Sarwar¹Rawal Institute of Health Sciences Islamabad²Federal Medical and Dental College Islamabad³PMC Faisalabad

Article Received: September 2019 Accepted: October 2019 Published: November 2019

Abstract:

Background: Liver biopsy is one of the vital assessments of liver fibrosis which poses very fewer complications with the repeated onset of pain and hypotension.

Objectives: The objective of this research was to explore influencing factors of LSM (Liver Stiffness Measurement) reported with the help of Fibro Scan among chronic HBV infected cases.

Material and Methods: We carried out this research at Allied Hospital Faisalabad from December 2017 to June 2018 with the permission of the hospital ethical committee permission and informed consent of the patients. We collected the information from both male and female who were fifty in number.

Results: Almost every research elaborates the treatment and progress of Hepatitis infection along with liver fibrosis staging which also depended on the treatment and development of the disease. Liver fibrosis staging is a vital factor which determines the treatment and drug combination. ALT levels are increased through chronic viral infections among hepatitis affected patients which also contributes to the fibrosis development.

Conclusion: Among the selected patients, LSM values may only be restricted to increased values of ALT and cutoff values of LSM for every stage of the disease which is differently reported in different studies because of the differences in selected populations and hepatic fibrosis aetiology.

Keywords: Liver Biopsy, Liver Fibrosis, Hypotension, Pain, Stiffness, Fibro scan, HBV and Etiology.

Corresponding author:**Aroosa Ishaque,**

Rawal Institute of Health Sciences Islamabad

QR code



Please cite this article in press *An Assessment Of Liver Stiffness Measurements Influencing Factors Among Hepatitis B Infected Patients Through Fibro Scan., Indo Am. J. P. Sci., 2019; 06(11).*

INTRODUCTION:

Liver biopsy is one of the vital assessments of liver fibrosis which poses very fewer complications with the repeated onset of pain and hypotension. Many related rare complications are also reported for liver biopsy. Hypotension and pain are repeated complications reported by patients. Transient elastography is assessed repeatedly and extensively as a non-invasive assessment instrument of liver fibrosis [1]. Fibro Scan is a non-invasive tool which detects hepatic fibrosis which basis on the USG (imaging technology). Liver solidity reflects the intensity of fibrosis of the liver which can also be assessed through liver instant elasticity [2]. LSM was carried out through transient elastography with the help of Fibro Scan. Recently, transient elastography is one of the novel available approach for the non-invasive management of liver fibrosis. Earlier research studies have been carried out on HCV patients and recent research studies have shown similar accuracy of transient elastography on chronic HBV patients [3]. Previous studies carried out on LSM with transient elastography associated with liver fibrosis along with better diagnosis performance. Majority of the research studies conducted on patients who suffered from HCV because of the scarcely available data of the subject of chronic HBV [4]. Some important factors also include gender, age, liver inflammation, albumin presented by ALT (Alanine Transaminase), AT (Aspartate Transaminase), TBIL (Total Bilirubin), HBV DNA loads, HBV replication, portal vein pressure, BMI and Splenic Thickness and GGT [5 – 7]. The objective of this research was to explore influencing factors of LSM (Liver Stiffness Measurement) reported with the help of Fibro Scan among chronic HBV infected cases.

MATERIAL AND METHODS:

We carried out this research at Allied Hospital Faisalabad from December 2017 to June 2018 with the permission of the hospital ethical committee permission and informed consent of the patients. We collected the information from both male and female who were fifty in number. Patients were enrolled by

evaluating LSM with the help of Fibro Scan with a reference standard of the evaluation of Fibrosis. We did not include the studies conducted on liver disease. Information was gathered through some important factors like gender, age, liver inflammation, albumin presented by ALT (Alanine Transaminase), AT (Aspartate Transaminase), TBIL (Total Bilirubin), HBV DNA loads, HBV replication, portal vein pressure, BMI and Splenic Thickness and GGT. Other associated variables were scanning of liver stiffness and HBV patient's evaluation. We did not include liver disease patients showing other than mentioned reasons. Data were analyzed through SPSS software for SD and SE.

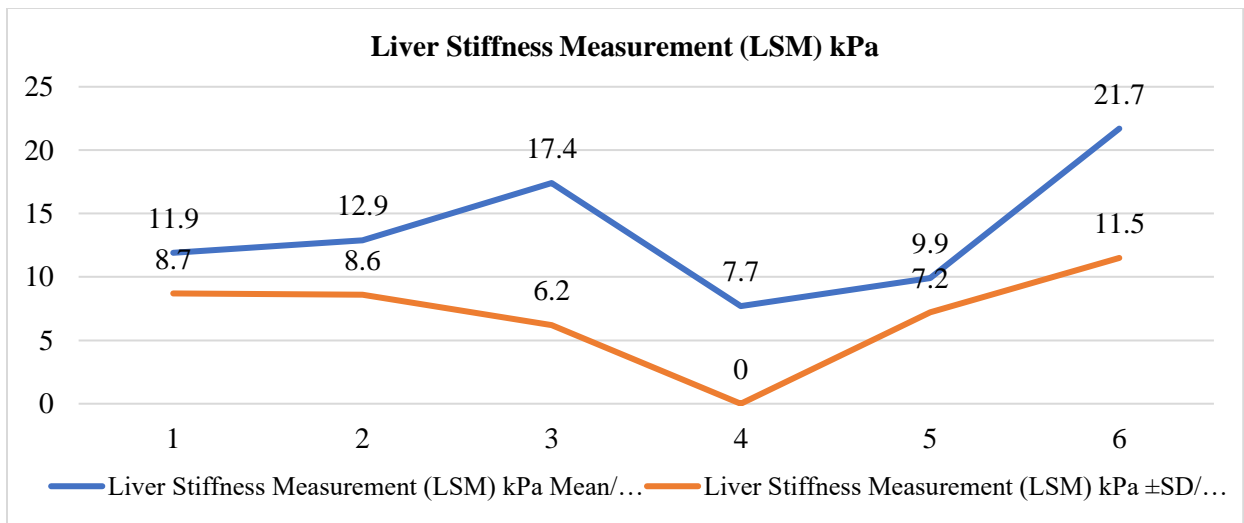
RESULTS:

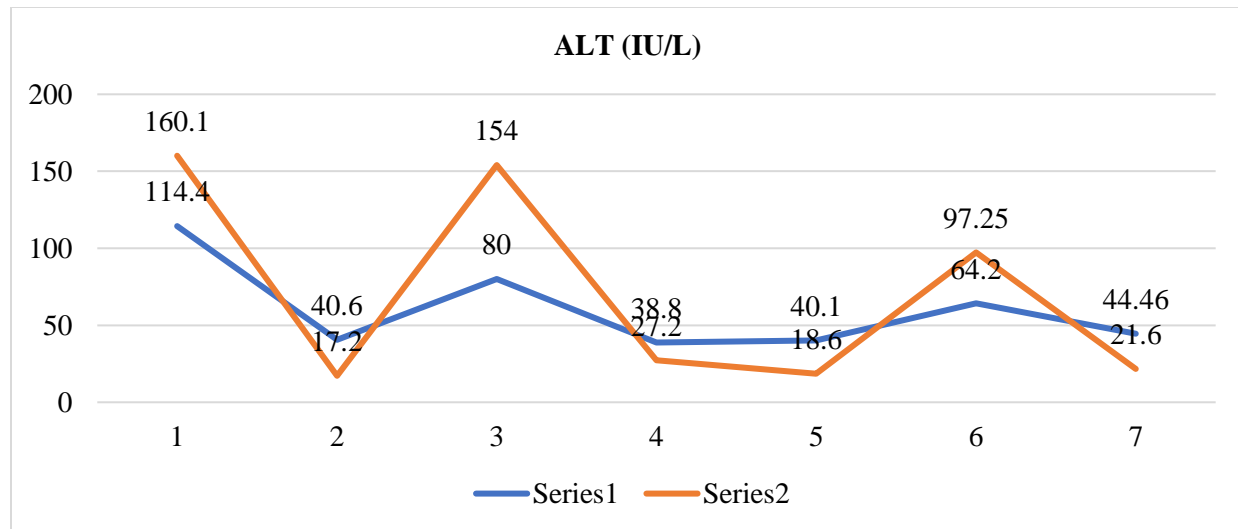
Almost every research elaborates the treatment and progress of Hepatitis infection along with liver fibrosis staging which also depended on the treatment and development of the disease. Liver fibrosis staging is a vital factor which determines the treatment and drug combination. ALT levels are increased through chronic viral infections among hepatitis affected patients which also contributes to the fibrosis development.

Outcomes are presented in the given Table. Tabular data reflects information about chronic Hepatitis infection, disease progress and management are dependent on stages of the Liver Fibrosis. Drug combination and alternative management options are also possible through Liver Fibrosis staging. Chronic viral infections in hepatitis also increase with an increase in the levels of ALT in the body which also attributes in the Fibrosis progression. Therefore, to treat HBV infection the role of Fibrosis staging plays a vital role in antiviral disease management. All research studies conducted on LSM and liver fibrosis were higher among chronic HBV patients with increased ALT levels. A positive association was reported between ALT, LSM and male gender among all HBV infected patients.

Table: Measurements of Liver Stiffness

Liver Stiffness Measurement (LSM) kPa		Hepatitis B antigen (HBeAg)		Stage - II		Stage - III		Stage - IV		ALT (IU/L)		Mean BMI (kg/m ²)	
Mean/ Value	±SD/ Range	No	%	No	%	No	%	No	%	Mean/ Value	±SD/ Range	Mean	±SD
6.6	1.5 – 75.0	-	-	-	-	-	-	-	-	33	8 – 62	-	-
16.8	6.9 – 47.2	-	-	-	-	-	-	-	-	-	-	-	-
11.9	8.7	-	-	60	30.2	37	18.6	99	49.7	114.4	160.1	23.6	3.1
12.9	8.6	-	-	-	-	-	-	23	-	40.6	17.2	-	-
17.4	6.2	103	41	-	-	-	-	46	-	80	154	-	-
7.7	0	408	36.1	-	-	-	-	-	-	38.8	27.2	-	-
9.9	7.2	85	48.6	-	-	-	-	-	-	40.1	18.6	-	-
21.7	11.5	-	-	-	-	-	-	-	-	64.2	97.25	-	-
12.9	4.4 – 57.1	-	-	97	75.8	18	14.1	110	85.9	44.46	21.6	24.06	2.9





DISCUSSION:

Liver biopsy is one of the vital assessments of liver fibrosis which poses very fewer complications with the repeated onset of pain and hypotension. Many related rare complications are also reported for liver biopsy. Hypotension and pain are repeated complications reported by patients. Transient elastography is assessed repeatedly and extensively as a non-invasive assessment instrument of liver fibrosis. Various systemic reviews report LSM by transient elastography with higher specificity and sensitivity to identify histological liver cirrhosis [8]. The liver stiffness was presented in kPa (kilo Pascal). All those patients who presented an increased level of ALT who had an increased LSM in comparison to normal levels of ALT at the same Liver Fibrosis level. All those patients who presented an increased level of ALT also presented increased LSM values instead of increased Liver Fibrosis degree. Fibro Scan is a non-invasive tool which detects hepatic fibrosis which basis on the USG (imaging technology) [9 – 10].

Liver solidity reflects liver fibrosis intensity, which can be assessed with the detachment of the liver instant elasticity. LSM was measured with the help of transient elastography by utilizing Fibro Scan. Collectively, the levels of ALT greatly affect Fibro Scan values; whereas, variation in the levels of ALT did not influence LecT-Hepa [11]. Our research is among unique studies which compare Fibro Scan and LecT-Hepa. Majority of the research studies were carried out on the chronic HCV patients due to reduced availability of information on HBV. Biochemistry evaluation was also conducted in the course of liver biopsy which includes ALT, AST, bilirubin, GGT, alpha-1 globulin, albumin, albumin and alpha-2 globulin to globulin proportion. The clinical haematological assessment was also conducted at the

same time which included WBC, platelet count, haemoglobin (Hb), alpha-fetoprotein and prothrombin time [12].

CONCLUSION:

Among the selected patients, LSM values may only be restricted to increased values of ALT and cutoff values of LSM for every stage of the disease which is differently reported in different studies because of the differences in selected populations and hepatic fibrosis aetiology.

REFERENCES:

1. Jung, K. S., Kim, S. U., Ahn, S. H., Park, Y.N., Kim, D. Y., Park, J. Y, Han, K.-H. (2011). Risk assessment of hepatitis B virus-related hepatocellular carcinoma development using liver stiffness measurement (Fibro Scan). *Hepatology* (Baltimore, Md.), 53(3), 885–94.doi:10.1002/hep.24121.
2. Kim BK, Kim HS, Park JY, Kim DY, Ahn SH, et al. (2012) Prospective Validation of ELF Test in Comparison with Fibro scan and Fibro Test to Predict Liver Fibrosis in Asian Subjects with Chronic Hepatitis B. *PLoS ONE* 7(7): e41964.doi: 10.1371/journal.pone.0041964.
3. Kim, D. Y., Kim, S. U., Ahn, S. H., Park, J.Y., Lee, J. M., Park, Y. N, Han, K.-H. (2009). The usefulness of Fibro Scan for detection of early compensated liver cirrhosis in chronic hepatitis B. *Digestive diseases and sciences*, 54(8), 1758–63.doi:10.1007/s10620-008-0541-2.
4. Kim, S U, Seo, Y. S., Cheong, J. Y., Kim, M.Y., Kim, J. K., Um, S. H., Ahn, S. H. (2010). Factors that affect the diagnostic accuracy of liver fibrosis measurement by Fibro scan in patients with chronic hepatitis B. *Alimentary pharmacology &*

- therapeutics, 32(3), 498–505. doi:10.1111/j.1365-2036.2010.04353.
5. Go bel, T., et al., (2011). "High prevalence of significant liver fibrosis and cirrhosis in chronic hepatitis B patients with normal ALT in central Europe." *JMV Journal of Medical Virology* 83(6): 968-973.
 6. Hsu, C.-W., Liang, K.-H., Huang, S.-F., Tsao, K.-C., & Yeh, C.-T. (2013). Development of a non-invasive fibrosis test for chronic hepatitis B patients and comparison with other unpatented scores. *BMC research notes*, 6, 212. doi:10.1186/1756-0500-6-212.
 7. Jin, W., Lin, Z., Xin, Y., Jiang, X., Dong, Q & Xuan, S. (2012). Diagnostic accuracy of the aspartate aminotransferase-to-platelet ratio index for the prediction of hepatitis B related fibrosis: a leading meta-analysis. *BMC Gastroenterology*, 12, 14. doi:10.1186/1471-230X-12-14.
 8. Chan, H. L.-Y., Wong, G. L.-H., Choi, P. C.-L., Chan, a W.-H., Chim M-L, Yiu, K.K.-L., Wong, V. W.-S. (2009). Alanine aminotransferase-based algorithms of liver stiffness measurement by transient elastography (Fibro scan) for liver fibrosis in chronic hepatitis B. *Journal of viral hepatitis*, 16(1), 36–44. doi:10.1111/j.1365-2893.2008.01037.
 9. Ding, H., Wu, T., Ma, K., Wang, X., Wu, Z., Guo, W., Ning, Q. (2012). Noninvasive measurement of liver fibrosis by transient elastography and influencing factors in patients with chronic hepatitis B-A single-centre retrospective study of 466 patients. *Journal of Huazhong University of Science and Technology. Medical sciences Huazhong like ji da Xue xue bao. Yi Xue Ying De wen ban = Huazhong keji daxue xuebao. Yixue Yingdewen ban*, 32(1), 69–74. doi:10.1007/s11596-012-0012.
 10. Du, D., Zhu, X., Kuno, A., Matsuda, A., Tsuruno, C., Yu, D., Narimatsu, H. (2012). Comparison of LecT-Hepa and Fibro Scan for assessment of liver fibrosis in hepatitis B virus-infected patients with different ALT levels. *Clinica Chimica Acta; international journal of clinical chemistry*, 413(21-22), 1796–9. doi: 10.1016/j.cca.2012.07.005.
 11. Fung, J., et al. (2008). "Correlation of liver biochemistry with liver stiffness in chronic hepatitis B and the development of a predictive model for liver fibrosis." *LIV Liver International* 28(10): 1408-1416.
 12. Fung, J., Lai, C.-L., But D, Hsu A, Seto W-K, Cheng C, Yuen, M.-F. (2010). Reduction of liver stiffness following resolution of acute flares of chronic hepatitis B. *Hepatology international*, 4(4), 716–22. doi:10.1007/s12072-010-9189.