



Journal Homepage: - [www.journalijar.com](http://www.journalijar.com)  
**INTERNATIONAL JOURNAL OF  
 ADVANCED RESEARCH (IJAR)**

Article DOI: 10.21474/IJAR01/5778  
 DOI URL: <http://dx.doi.org/10.21474/IJAR01/5778>



### RESEARCH ARTICLE

#### “TO STUDY THE PREVALENCE OF PERIPHERAL NEUROPATHIES IN CASES OF HEPATITIS B & HEPATITIS C”.

**Dr. Prayag Garg<sup>1</sup>, Dr. Mukti Bhatnagar<sup>2</sup>, Dr. S.K. Jha<sup>3</sup> and Dr. S.K. Virmani<sup>4</sup>.**

1. Junior Resident, Department of Medicine, Subharti Medical College, Meerut.
2. Professor, Department of Medicine, Subharti Medical College, Meerut.
3. Associate Professor, Department of Medicine, Subharti Medical College, Meerut.
4. Professor and Head, Department of Medicine, Subharti Medical College, Meerut.

#### Manuscript Info

##### Manuscript History

Received: 05 September 2017  
 Final Accepted: 07 October 2017  
 Published: November 2017

#### Abstract

Viral hepatitis B and C have become a major public health problem. Hepatitis B affects approximately 30% of world population with serological evidence of either current or past infection, hepatitis C virus infects approximately 3% of world population placing about 170 million people at risk of developing liver disease. Peripheral Neuropathy needs to be focused as it is important complication of cirrhosis of liver that may seriously impair patient's routine daily activities and quality of life. Peripheral nerve dysfunction is significantly more frequent in advanced liver disease compared with early liver damage. However, only few hepatologists really screen patients for PN due to time-consuming neurophysiological tests. Since treatment regimens are limited early diagnosis of is the most effective approach especially in resource restrained settings. Present study was aimed to study the association between neuropathy and Hepatitis B and Hepatitis C and to evaluate the incidence and character of peripheral neuropathy in patients with hepatitis B and hepatitis C.

*Copy Right, IJAR, 2017,. All rights reserved.*

#### Introduction:-

Peripheral neuropathy is a common neurological problem in clinical practice, and, because of the variable presentation and disparate causes, a logical and sequential approach is necessary for the evaluation and proper management<sup>1</sup>. Hepatitis B virus (HBV) and hepatitis C virus (HCV) are among the principal causes of severe liver disease, including hepatocellular carcinoma (HCC) and cirrhosis related end-stage liver disease<sup>2</sup>.

Hepatitis B virus (HBV) infection is leading health problem globally. In terms of endemicity, India comes in Intermediate zone.<sup>6</sup> According to WHO, the prevalence of Hepatitis B in general population in India ranges from 0.1% to 11 %, <sup>10</sup> whereas various studies about epidemiology of hepatitis B in India report HBsAg seropositivity range from 2% - 4.7%<sup>3</sup>. The reason for this heterogeneity is variation in social, economic and health factors in different regions of India<sup>4</sup>. WHO report of hepatitis C suggests its prevalence 3% in the world which is a significant burden on public health<sup>5</sup>.

Peripheral neuropathy (PN) is described in 9% of patients chronically infected by HCV<sup>6</sup> and when cryoglobulinemia is present this number can rise to more than 30%.<sup>7,8,9</sup> Recently, after finding the virus RNA in nerve biopsies, some

authors suggested a direct viral aggression against the nerve.<sup>10</sup> However, PN seems to be the result from immunomediated mechanisms determined by the HCV in the nerve rather than related to direct viral infection with consequent in situ lesion in the nervous tissue<sup>11</sup>. Peripheral neuropathy associated with HCV is usually related to axonal damage, probably secondary to vasculitis, fascicular ischemia and subsequent axonal degeneration<sup>12</sup>.

In this study we aimed to determine the association between peripheral neuropathy and Hepatitis B and Hepatitis C. We also evaluate the incidence and character of peripheral neuropathy in patients with hepatitis B and hepatitis C.

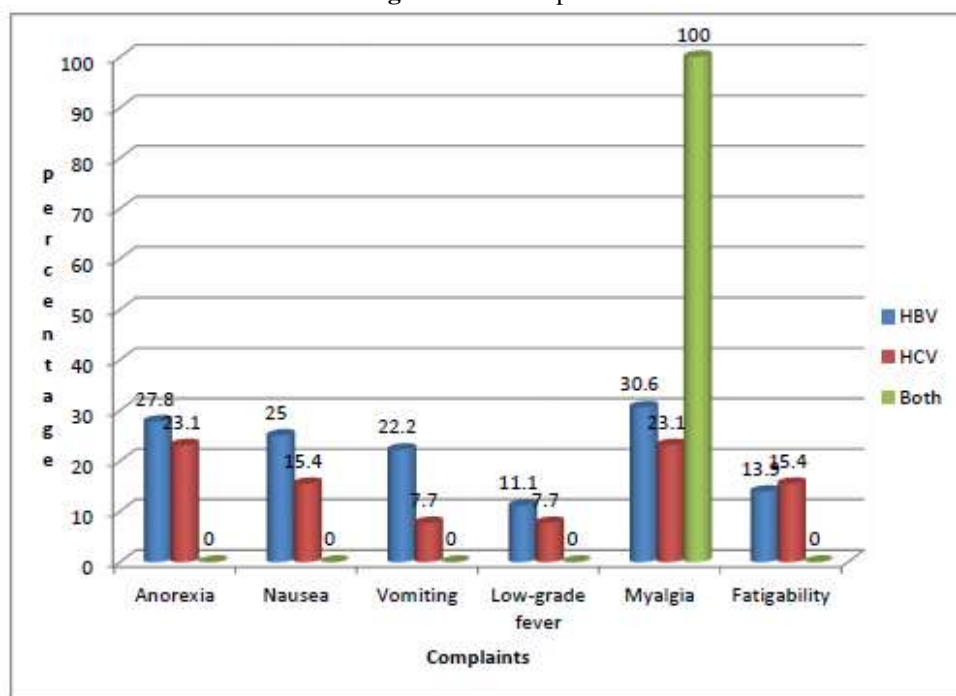
### Methodology:-

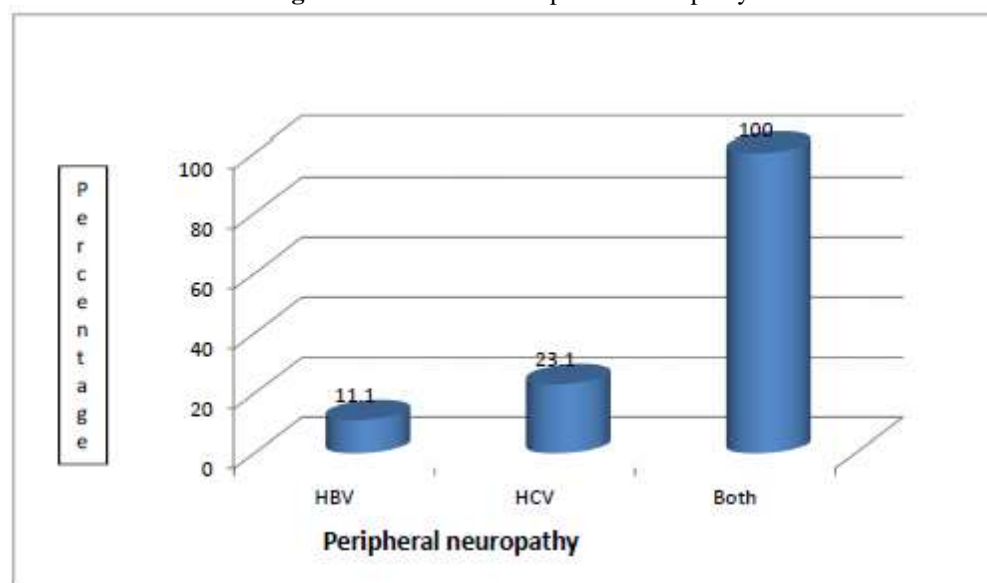
This was a prospective observational study carried out in Department of Medicine at Chhatrapati Shivaji Subharti Hospital, Meerut. Patients of all age group presenting with either hepatitis B and hepatitis C in the department of medicine and admitted to the hospital were studied during the study period from June 2015 to May 2017 were taken for this study. All aged patients diagnosed with hepatitis B and hepatitis C of chronic liver disease and either sex were included. Chronic renal failure, diabetes mellitus, CHF, hypertension, malignancy, alcohol intake and not consenting to participate patients were excluded from this study. Hepatitis B and Hepatitis C assessed by ELISA and recombinant immunoblot. Blood pressure was measured in both arms using a mercury sphygmomanometer after a 15 minute rest. All patients underwent an electrophysiological examination according to a simplified nerve conduction study (NCS) protocol to define the presence of distal symmetrical neuropathy. Peripheral nerve was electro physiologically defined as affected when at least two parameters were found to be abnormal (prolonged DL, reduced MCV and/or SCV, reduction of SAP and/or CMAP amplitude, prolonged F-wave latency). Data was analyzed using Statistical Package for Social Sciences, version 23 (SPSS Inc., Chicago, IL). The level  $P < 0.05$  was considered as the cutoff value or significance.

### Observation And Result:-

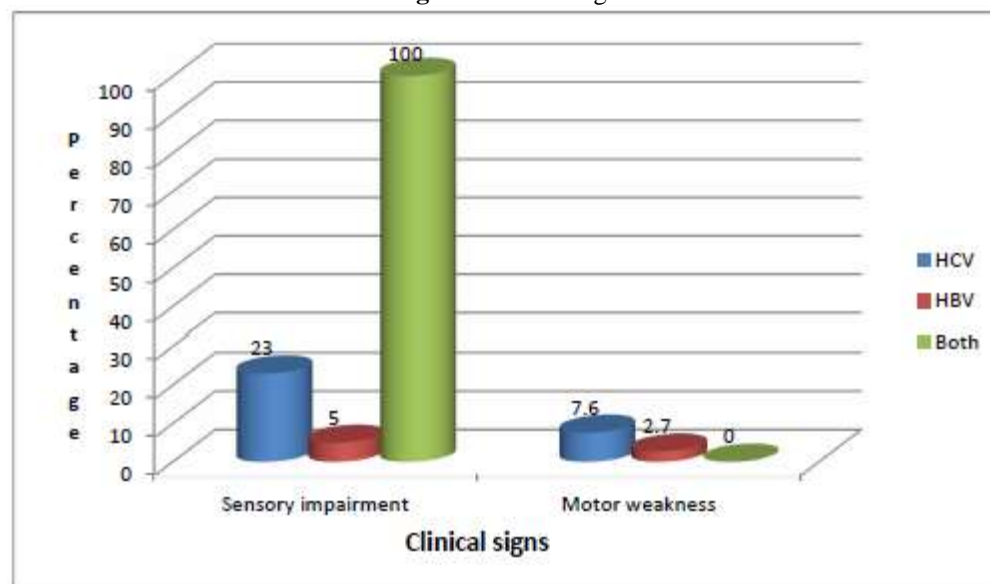
In the present study, 36 (72.0%) were Hepatitis B patient, 13 (26.0%) were Hepatitis C patient, & only 1 (2.0%) patient was such who was inflicted with both, Hepatitis B+ Hepatitis C in among 50 cases of studied patients. 46% patients were in age category of 51-60 years and 29 (58.0%) were male patient and 21 (42.0%) were females. Chief complaints of the patients had been, Anorexia in 13 (26.0%) cases, Nausea in 11 (22.0%) cases, Vomiting 9 (18.0%) cases, Low-grade fever 5 (10.0%) cases, Myalgia 15 (30.0%) cases, and Fatigability in 7 (14.0%) cases (as seen in fig 1)

Fig 1:-Chief Complaints



**Fig 2:-** Prevalance Of Peripheral Neuropathy

Prevalence of Peripheral neuropathy in HBV and HCV patients, 4 (11.1%) patients of inflicted by HBV had Peripheral neuropathy, 3 (23.1%) patients of HCV were found affected by the disease (as seen in fig 2). Besides 100% prevalence of peripheral neuropathy was observed in patients inflicted by both HBV & HCV hepatitis. As mentioned 3 (23%) patient of HCV, 2 (5%) patient of HBV & 1 (100.0%) of both, HCV & HBV had shown symptoms of Sensory impairment. Besides 1 (7.6%) patient of HCV & 1 (2.7%) patient of HBV had also shown signs of Motor weakness in the present study (as seen in fig 3).

**Fig 3:-** Clinical Signs

Most of the patients gave history of multiple injections during past years and use of unsterilized syringes and needles by the regional medical practitioners. The mean B12 level among patient was  $478.2 \pm 169.2$ . 11 (22.0%) patients were found to possess mean Vitamin B12 levels  $\leq 340$ , in 20 (40.0%) patients B12 levels were 341-500, in 12 (24.0%) patients B12 levels were 501-700 and in 7 (14.0%) patients B12 levels were  $>700$ . In present study, motor studies in case of peripheral neuropathy patients have been conducted and observed that mean latency was  $7.69 \pm 1.03$  for cases while  $4.3 \pm 1.41$  for controls and mean amplitude was  $7.0 \pm 0.93$  for cases while  $8.4 \pm 2.03$  for controls. Mean latency was higher but mean amplitude was lower in cases as compared to controls. In our present

study, sensory amplitude was observed  $4.1 \pm 1.06$  for cases while  $7.82 \pm 1.15$  for controls. 4 out of 36 (11.1%) patients of inflicted by HBV had Peripheral neuropathy, 3 out of 30 (23.1%) patients of HCV were found affected by the disease. Besides 1 out of 1 (100%) prevalence of peripheral neuropathy was observed in patients inflicted by both HBV & HCV hepatitis. Overall 8 out of 50 cases (16%) had Peripheral neuropathy in our study.

### Discussion:-

Viral hepatitis B and C have become a major public health problem. Hepatitis B affects approximately 30% of world population or about 2 billion people have serological evidence of either current or past infection, hepatitis C virus infects approximately 3% of world population placing about 170 million people at risk of developing liver disease<sup>13,14</sup>. In India, HbsAg prevalence rate among general population range from 0.1% to 11.7%, being between 2-8% in most studies and HbsAg prevalence rate among blood donors range between 1-4.7%<sup>15</sup>. In India, limited epidemiological data is available on Hepatitis C. HBV and HCV are found in blood and blood-derived body fluids of infected person. Transmission results by either percutaneous or mucosal exposure to blood or other infectious body fluids. PN need to be focused as it is important complication of cirrhosis of liver that may seriously impair patient's routine daily activities and quality of life<sup>16,17,18</sup>.

In the present study, 36 (72.0%) were Hepatitis B patient, 13(26.0%) were Hepatitis C patient, & only 1(2.0%) patient was such who was inflicted with both, Hepatitis B+ Hepatitis C in among 50 cases of studied patients. The overall rate of HBsAg positivity has been reported to range between 2% and 8% in most studies<sup>19,20</sup>. Chaudhary et al reported the overall carrier rate to 5.3% in their study. 99 46% patients were in age category of 51-60 years and 29 (58.0%) were male patient and 21(42.0%) were females. These findings were concordance with the study of Sharma A et al<sup>21</sup> who observed mean age was found to be 55 years, with 69% being male and 31% females. Most of the patients gave history of multiple injections during past years and use of unsterilized syringes and needles by the regional medical practitioners. Similar findings were seen in a study done by Sharma A et al<sup>21</sup>. In 1999 a report was published in the bulletin of WHO by Kane et al, the study suggested that approximately 8-16 million HBV and 2.3-4.7 million HCV infections every year may result from unsafe injections<sup>22</sup>.

Prevalence of Peripheral neuropathy in HBV and HCV patients was that 4 (11.1%) patients of inflicted by HBV had Peripheral neuropathy, 3 (23.1%) patients of HCV were found affected by the disease. Besides 100% prevalence of peripheral neuropathy was observed in patients inflicted by both HBV & HCV hepatitis. Similar findings were seen in a study done by Sharma A et al<sup>21</sup>. In a large prospective study, Cacoub and colleagues diagnosed a peripheral neuropathy in 9% of 321 HCV patients on the basis of clinical symptoms only<sup>6</sup>. The prevalence of PN in our study (10.6%), if based on clinical assessment only, is very close to that of Cacoub and colleagues<sup>6</sup>.

Our study has certain strengths since it included all the consecutive patients of hepatitis B and hepatitis C eliminating selection bias, and prospective observational design which was predict outcome for north Indian population. However, our study has few limitations also.

### Conclusion:-

There is a need to carry out larger studies to better elucidate the epidemiology of Hepatitis B and C and to identify high prevalence areas and simultaneously focus on improving public health measures to prevent disease transmission and decrease the burden of disease.

### References:-

1. England JD, Asbury AK. Peripheral neuropathy. *Lancet* 2004; 363: 1251-61.
2. Baha W, Foullos A, Dersi N, They-they TP, El alaoui K, Nourchafi N, et al. Prevalence and risk factors of hepatitis B and C virus infections among the general population and blood donors in Morocco. *BMC Public Health*. 2013; 13:50.
3. Abraham P. Viral Hepatitis. *India Clin Lab Med*. 2012; 32(2):159-74.
4. Phukan P. Compliance to occupational safety measures among the paramedical workers in a tertiary hospital in Karnataka, South India. *Int J Occup Environ Med*. 2014;5(1):40-50.
5. World Health Organization (WHO). Viral hepatitis - Report by the Secretariat.[Cited 2009 November 12]. [Accessed 2012 April 25]. Available from: [http://apps.who.int/gb/ebwha/pdf\\_files/EB126/B126\\_15-en.pdf](http://apps.who.int/gb/ebwha/pdf_files/EB126/B126_15-en.pdf).
6. Cacoub P, Renou C, Rosenthal E, et al. Extrahepatic manifestation of hepatitis C virus infection in 321 patients. *Medicine (Baltimore)* 2000; 79:47-56.

7. Lidove O, Cacoub P, Maisonnobe T, et al. Hepatitis C virus infection with peripheral neuropathy is not always associated with cryoglobulinaemia. *Ann Rheum Dis* 2001; 60:290-292.
8. Cacoub P, Poynard T, Ghillani P, Charlotte F, Olivi M, Piette JC. Extrahepatic manifestations of chronic hepatitis. *Arthritis Rheum* 1999; 42:2204-2212.
9. Lidove O, Maisonnobe T, Servan J, et al. Peripheral neuropathy and hepatitis C virus infection: more than cryoglobulinemia. *Rev Med Interne* 2001; 22:939-947.
10. Paoletti V, Donnarumma L, De Matteis A, et al. Peripheral neuropathy without cryoglobulinemia in patients with hepatitis C virus infection. *Panminerva Med* 2000; 42:175-178.
11. De Martino L, Sampaolo S, Tucci C, et al. Viral RNA in nerve tissues of patients with hepatitis C infection and peripheral neuropathy. *Muscle Nerve* 2003; 27:102-104.
12. Authier FJ, Bassez G, Payan C, et al. Detection of genomic viral RNA in nerve and muscle of patients with HCV neuropathy. *Neurology* 2003; 60:808-812.
13. Hou J, Liu Z, Gu F. Epidemiology and Prevention of Hepatitis B Virus Infection. *Inter J Med Scie.* 2005;2(1):50-7.
14. WHO. Global surveillance and control of hepatitis C. Report of a WHO Consultation organized in collaboration with the Viral Hepatitis Prevention Board, Antwerp, Belgium. *J Viral Hepat.* 1999;6:35-47.
15. Acharya SK, Panda SK, Duphare H. Chronic hepatitis in a large Indian hospital. *Natl Med J India.* 1993;6:202-6.
16. Keresztes K, Istenes I, Folhoffer A, Lakatos PL, Horvath A, Csak T, et al. Autonomic and sensory nerve dysfunction in primary biliary cirrhosis. *World J Gastroenterol.* 2004;10:3039-43.
17. Kharbanda PS, Prabhakar S, Chawla YK, Das CP, Syal P. Peripheral neuropathy in liver cirrhosis. *J Gastroenterol Hepatol.* 2003;18:922-6.
18. Chari VR, Katiyar BC, Rastogi BL, Bhattacharya SK. Neuropathy in hepatic disorders. A clinical, electrophysiological and histopathological appraisal. *J Neurol Sci.* 1977;31:93-111.
19. Abraham P. Viral hepatitis in India. *Clin Lab Med.* 2012;32:159-174.
20. Prevention of Hepatitis B in India – An Overview. World Health Organization South-East Asia Regional Office; New Delhi: 2002.
21. Sharma A, Singhal S, Mehta D, Dagar A. Prevalence of hepatitis B and C among patients admitted in respiratory medicine ward of a tertiary care hospital in Mullana, Ambala Haryana, India. *Int J Res Med Sci* 2017;5:1546-9.
22. Kane A, Lloyd J, Zaffran M, Simonsen L, Kane M. Transmission of hepatitis B, hepatitis C and human immunodeficiency viruses through unsafe injections in the developing world: model-based regional estimates. *Bulletin of the World Health Organization.* 1999;77(10):801-7.