



Research Article

TO STUDY AND EVALUATE THE SERUM VITAMIN B12 LEVELS IN PATIENTS OF CIRRHOSIS OF LIVER AND ITS CORRELATION WITH PERIPHERAL NEUROPATHY

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ABSTRACT

Aims and Objective: To study and evaluate the serum vitamin b12 levels in patients of cirrhosis of liver and its correlation with peripheral neuropathy

Material Methods: All the Patients having cirrhosis of liver, attending Medicine Outpatient Department and admitted in indoor medical wards. Total number of patients in this study is 100. In our study, vitamin B12 levels assessed in sera of 100 patients of liver cirrhosis. Mean Serum Vitamin B12 level of 1953.73±301.40 (pg/ml) had peripheral neuropathy whereas mean serum Vitamin B12 level of 887.48±492.67 (pg/ml) did not had peripheral neuropathy and this difference is statistically significant (p=0.0001).

Results: Serum Vitamin B12 levels were assessed in different etiology of liver cirrhosis. In our study among 39 patients of alcoholic liver cirrhosis 26 patients had peripheral neuropathy and the mean value of Serum Vitamin B12 level among them was 1579.21±605.38 (pg/ml) and statistical association was insignificant. (p=0.1) B12 was found in female patients of liver cirrhosis with a mean value of 1757.70±529.22 (pg/ml) and Serum Vitamin B12 levels assessed in different etiology of liver cirrhosis with peripheral neuropathy.

Conclusion: In our study we finally conclude that Peripheral neuropathy more commonly seen in patients of cirrhosis of liver predominantly sensory motor demyelinating type of polyneuropathy irrespective of etiology of liver cirrhosis, and Vitamin B12 deficiency seems to be a precipitating or causative factor for the development of peripheral neuropathy in patients of cirrhosis of liver.

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INTRODUCTION

Cirrhosis has been regarded as an end-stage disease that invariably leads to death, unless liver transplantation is done, and the only preventive strategies have been screening for oesophageal varices and hepatocellular carcinoma. The transition from chronic liver disease to cirrhosis involves inflammation, activation of hepatic stellate cells with ensuing fibrogenesis, angiogenesis, and parenchymal extinction lesions caused by vascular occlusion. Peripheral neuropathy need is an important complication of cirrhosis of liver that may seriously impair patient's routine daily activities and quality of life.

Peripheral neuropathy has a variety of systemic, metabolic, and toxic causes. It has been reported in association with chronic liver disease, including liver cirrhosis and chronic hepatitis. Some diseases producing liver dysfunction can independently cause peripheral neuropathy. Alcohol consumption is one such hypothesis. Autonomic neuropathy has also been reported in association with chronic liver disease.

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MATERIAL AND METHODS

Place of Study

The study was conducted in the Department of Medicine, Government Medical College, Kannauj, during 2019-2020.

Study Population

All the Patients having cirrhosis of liver, attending Medicine Outpatient Department and admitted in indoor medical wards of Government Medical College, Kannauj, and fulfilling the following criteria shall be considered.

Study Sample

The patients of study population fulfilling the criteria for inclusion, having none of the criteria for exclusion and consenting to participate in the study, were taken as the study sample. Total number of patients in this study is 100.

Inclusion Criteria

All those patients admitted in medicine ward of Government Medical College, Kannauj shall be the subjects of present study.

Patient should be diagnosed to be having cirrhosis of liver by presence of symptoms and signs of chronic liver cell dysfunction in association with evidence of portal hypertension (portal vein diameter > 12mm and presence of oesophageal varices) with or without liver biopsy shall be the subjects of present study.

Exclusion Criteria

- Overt Hepatic Encephalopathy
- Diabetic neuropathy
- Cerebrovascular disease
- Primary neurological disorder
- Chronic renal failure
- Surgical gastrectomy
- Malabsorption syndrome
- Human immunodeficiency virus disease

Evaluation of Patients

Patient those enrolled in study was evaluated for:

- Patients personal detail- Name, Age, Sex, Socioeconomic status according to Kuppuswamy classification, Address
- Presenting complaint- Fever, nausea, vomiting, yellowish discoloration of eyes and urine, pain abdomen, distension of abdomen, hematemesis, malena.
- History of present illness
- Past history - Jaundice, ascites, hematemesis, malena, blood transfusion, surgical procedure.
- Personal history – Alcohol intake (amount and duration)
- Treatment and drug history

General Examination

The all patients are examined for presence or absence of: Icterus, pallor, pedal edema.

Systemic examination: General Examination

The all patients are examined for presence or absence of: Icterus, pallor, pedal edema.

Systemic examination

- Respiratory system
- Cardiovascular system
- Abdominal examination
- Central nervous system

Investigations

- Hemoglobin
- Total leucocytes count
- Differential count
- General blood picture
- Platelet count
- Random blood sugar
- Serum Na+, Serum K+
- Serum Urea, Serum Creatinine
- Prothrombin time, International normalized ratio

Liver Function Test

- Serum Bilirubin (total and direct)
- Serum glutamic-pyruvic transaminase (SGPT)

- Serum glutamic oxaloacetic transaminase (SGOT)
- Serum Alkaline Phosphatase
- Serum Total Protein
- Serum Albumin

Ultrasound Abdomen

- Liver echo texture
- Portal Vein Diameter
- Size of liver & spleen
- Ascites

Viral Markers

- HBsAG
- Anti HCV
- HIV

Serum Vitamin B12

After completion of data, the statistical analysis has been done with help of unpaired t test, Chi Square test; Spearman Correlation coefficient test and conclusion were drawn. The p-value < 0.05 was considered significant. All the analysis was carried out by using SPSS 16.0 version:

Distribution of Serum Vitamin B12 in patients of liver cirrhosis with and without peripheral neuropathy

Patients of cirrhosis of liver	Serum Vitamin B12 (pg/ml) (mean ± SD)
With peripheral neuropathy	1953.73±301.40
Without peripheral neuropathy	887.48±492.67
p-value	0.0001*

In our study, vitamin B12 levels assessed in sera of 100 patients of liver cirrhosis. Mean Serum Vitamin B12 level of 1953.73±301.40 (pg/ml) had peripheral neuropathy whereas mean serum Vitamin B12 level of 887.48±492.67 (pg/ml) did not had peripheral neuropathy and this difference is statistically significant (p=0.0001).

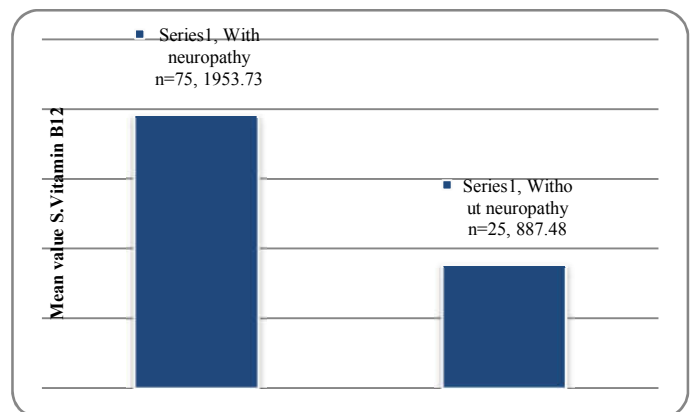


Table 1 Distribution of Serum Vitamin B12 in patients of liver cirrhosis with and without peripheral neuropathy

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Table 11 Age and sex distribution of Serum Vitamin B12 levels in patients of liver cirrhosis

	No of patients (n=100)	Serum Vitamin B12 (pg/ml) (mean ± SD)	p-value
Age in years			
25-50	45	1691.53±527.30	
50-60	41	1698.22±553.10	0.93
>60	14	1640.79±489.06	
Gender			
Male	73	1661.08±529.02	
Female	27	1757.70±529.22	0.41

Table 2 Association of Serum Vitamin B12 levels with different etiology of liver cirrhosis having peripheral neuropathy

Etiology	Number of patients (n=75)	Serum Vitamin B12 (pg/ml) (mean ± SD)	p-value
Alcohol intake			
Yes	26	1579.21±605.38	
No	49	1756.20±464.47	0.10
HBsAg			
Positive	23	1723.93±511.79	
Negative	52	1671.41±537.87	0.65
HCV			
Positive	26	1868.23±303.32	
Negative	49	1609.57±584.12	0.06

DISCUSSION

Serum Vitamin B12 levels were assessed in different etiology of liver cirrhosis.

In our study among 39 patients of alcoholic liver cirrhosis 26 patients had peripheral neuropathy and the mean value of Serum Vitamin B12 level among them was 1579.21±605.38 (pg/ml) and statistical association was insignificant. (p=0.1) B12 was found in female patients of liver cirrhosis with a mean value of 1757.70±529.22 (pg/ml) and Serum Vitamin B12 levels assessed in different etiology of liver cirrhosis with peripheral neuropathy. Raised levels of vitamin B12 in liver cirrhosis may be due to hepatocellular damage caused by liver cirrhosis leads to cellular leakage of vitamin B 12 in circulation with subsequent intracellular Vitamin B12 deficiency.

CONCLUSION

The mean Serum Vitamin B12 levels in patients of cirrhosis of liver with peripheral neuropathy were compared with patients of cirrhosis of liver without peripheral neuropathy and we found that Serum Vitamin B12 levels were statistically significantly raised.

In our study we finally conclude that Peripheral neuropathy more commonly seen in patients of cirrhosis of liver predominantly sensory motor demyelinating type of polyneuropathy irrespective of etiology of liver cirrhosis, and Vitamin B12 deficiency seems to be a precipitating or causative factor for the development of peripheral neuropathy in patients of cirrhosis of liver

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