Original Article

Hyperuricemia in Patients with Chronic Liver Disease

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ABSTRACT

Objective: To determine the serum uric acid in patients with chronic liver disease.
Study Design: Case Series Descriptive Study
Place and Duration of Study: This study was conducted at the Tertiary Care Hospital during July 2018 to December 2018.
Materials and Methods: During the study period, all individuals with chronic liver disease admitted to the hospital were included in the study. The inclusion criteria were fifty patients with chronic liver disease attended tertiary care hospital of 12-60 year of age and either gender while the exclusion criteria were hematological malignancy, already on immunosuppressive or chemotherapeutic drugs, gout, medications as frusemide, thiazide or uric acid lowering agents as allopurinol, probenecid and febuxostat, chronic kidney disease, recent surgery, lesch nyhan syndrome and trauma. The duration and severity of chronic liver disease was assessed and the haematological and biochemical workup was done while the serum uric acid was determined by having venous blood sampling and sent for analysis. The frequency and percentages were computed for categorical variables whereas the mean ± SD was computed for numerical variables.
Results: During study period total fifty patients with chronic liver disease were recruited and studied had mean age ± SD identified as 51.20±6.67 (yrs) with male gender predominance. Regarding gender, the male and female population was 20 (40%) and female 30 (60%), residence the urban 23 (46%) and rural 27 (54%), etiology as hepatitis C 22 (44%), hepatitis B as 10 (20%), alcohol 13 (26%) and autoimmune 05 (10%), Child-Pugh Class A 22 (44%), B 14 (28%) and C 14 (28%), co-morbidities as Diabetes mellitus 13 (26%), Hypertension 10 (20%), obesity 08 (16%), osteoporosis 05 (10%) and no any 14 (28%) while the hyperuricemia was observed in 32 (64%) patient
Conclusion: The serum uric acid is arbiter of inflammation and tissue harm and considered as a marker for severity of chronic liver disease.
Key Words: Uric acid, Chronic liver disease, Hyperuricemia

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INTRODUCTION

Liver diseases are common all over the world as well as in India and the prevalence of liver diseases are likely to increase in the future.[1] Chronic liver disease is a disease process of progressive destruction and regeneration of liver parenchyma results in fibrosis and cirrhosis and is a major cause of mortality worldwide.[2] The diagnosis of chronic liver disease is made by clinical, biochemical, imaging and liver biopsy.[3] Uric acid is the final result of purine and is delivered in conditions wherein there is cell obliteration and consequently, destruction of the atomic material. Uric acid isn't just a result of cell demise; it is additionally a mediator of aggravation and tissue harm. Uric acid in tissues might be a significant activator of inflammation and accordingly, it elevates harm to encompassing tissues. In persistent liver disease, there is reformist harm to liver parenchyma with resulting loss of capacity.[4] In chronic liver illness of various etiologies, uric acid levels are discovered to be high. A high uric acid level is known impact of alcohol metabolism and along these lines, hyperuricemia might be found in alcoholic liver disease.[5] Contrasted with the serum levels, the tissue levels of uric acid might be far and away superior indicators of tissue injury. Hence, UA might be considered as a marker of tissue harm.[6] The study was conduct to determine the level of serum uric acid in individuals with chronic liver diseases presented at tertiary care hospital Hyderabad / Jamshoro.

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MATERIALS AND METHODS

The case series descriptive study was conducted at tertiary care hospital during July 2018 to December 2018. During the study period, all individuals with

chronic liver disease admitted to the hospital were included in the study. The inclusion criteria were fifty patients with chronic liver disease attended tertiary care hospital of 12-60 year of age and either gender while the exclusion criteria were hematological malignancy, already on immunosuppressive or chemotherapeutic drugs, gout, medications as frusemide, thiazide or uric acid lowering agents as allopurinol, probenecid and febuxostat, chronic kidney disease, recent surgery, lesch nyhan syndrome and trauma. The duration and severity of chronic liver disease was assessed and the haematological and biochemical workup was done while the serum uric acid was determined by having venous blood sampling and sent for analysis while the its level was assessed as per normal reference range of uric acid level. The proforma was designed for data collection while the analysis was done through SPSS to manipulate the categorical and numerical variables.

RESULTS

Table No.1: The Clinical Profile of Study Population

Parameter	Frequency (N=50)	Percentage (%)
AGE (yrs)		
12-19	07	14
20-29	09	18
30-39	15	30
40-49	08	16
50-60	11	22
GENDER		
Male	20	40
Female	30	60
RESIDENCE		
Urban	23	46
Rural	27	54
ETIOLOGY		
Hepatitis C	22	44
Hepatitis B	10	20
Alcohol	13	26
Autoimmune	05	10
CHILD-PUGH CLASS		
A	22	44
B	14	28
C	14	28
CO-MORBIDS		
Diabetes mellitus	13	26
Hypertension	10	20
Obesity	08	16
Osteoporosis	05	10
No any	14	28
HYPERURICEMIA		
Yes	32	64
No	18	36

During study period total fifty patients with chronic liver disease were recruited and studied had mean age ± SD identified as 51.20±6.67 (yrs) with male gender predominance. The clinical profile of study population is presented in Table I.

DISCUSSION

The serum uric acid level is estimated by the purine intake and uric acid formation and uric acid elimination by kidney and extrarenal routes.[7] The normal serum uric acid levels in males is 3.4 -7.2 mg/dL and in females is 2.4– 6.1 mg/dL.

The Long-term hyperuricemia is a risk factor to disturb joints, kidney, vessels, renal and connective tissues and may predispose to diabetes, hypertension, renal disease and cardiovascular disorders.[8]

Liver cirrhosis is a gradual chronic disease of the liver which involves the organ and is the irreversible consequence of various chronic liver disorders of different etiologies or the long term result of exposure to various harmful compounds.[9,10]

Karim SF, et al demonstrated that there is positive correlation between AST, ALT and prothrombin time in CLD subjects without cirrhosis.[11]

Jayabal M, observed raised BMI was related with an expanded frequency of NAFLD. Serum uric acid levels are altogether connected with NAFLD, and raised uric acid showed a high frequency of NAFLD.[12]

Hyder MA, et al demonstrated that there were 10 fold increases in mean value of AST in viral hepatitis, 13 folds increase in alcoholic liver disease and 5 fold in liver cirrhosis.[13]

Lee WC, et al demonstrated serum uric acid level related with the advancement of liver cirrhosis and the presence of raised serum liver proteins are significant causes and hazard components of chronic liver illness.[14]

Another study by Lee YJ, et al revealed that Serum uric acid is autonomously connected with the presence of NAFLD and uric acid might be a significant additional apparatus of appraisal.[15]

Paul R, et al observed that serum uric acid levels increased with high Child-Pugh class in chronic liver disease patients.[16]

Study by Siddiqui SA, et al observed coagulation abnormalities were profound in chronic liver disease patients.[17]

Study by Garcovich M, et al determined the low serum albumin levels in chronic liver disease patients.[18]

CONCLUSION

The serum uric acid level is an important part of spectrum of chronic liver disease and in tissues and may play an important role in inflammation and promote damage to surrounding tissue. It is an arbiter of inflammation and tissue harm and considered as a marker for severity of chronic liver disease.

Author's Contribution:

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Conflict of Interest: The study has no conflict of interest to declare by any author.

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