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ORIGINAL RESEARCH

To study Uric acid as risk factor in non alcoholic fatty liver disease (NAFLD) patients

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ABSTRACT

Aim: To study the prevalence of Uric Acid as risk factor associated with severity of NAFLD. **Objectives: Primary objective:** To assess prevalence of uric acid in NAFLD patients. **Secondary objective:** To assess association of uric acid as risk factor in NAFLD patients**. Methodology:** Present study was an observational prospective study between January 2023 to June 2024 in patients between age group 25-65 years attend OPD/IPD services at Department of Medicine, Mahatma Gandhi Hospital, Jaipur. **Results:** In this comparative analysis of hyperuricemia prevalence between individuals with and without non-alcoholic fatty liver disease (NAFLD), significant differences were observed. Among the 160 participants without NAFLD, 18 individuals (11.2%) were identified as having hyperuricemia. In contrast, among the 160 participants diagnosed with NAFLD, a notably higher proportion, comprising 55 individuals (34.4%), exhibited hyperuricemia. Statistical analysis revealed a highly significant p-value of less than 0.0001, indicating a strong association between the presence of NAFLD and the prevalence of hyperuricemia. **Conclusion:** The association between uric acid levels and non-alcoholic fatty liver disease (NAFLD) has been a subject of growing interest in recent years. In current study, elevated uric acid levels were significantly associated with NAFLD ($p < 0.0001$), supporting the link between hyperuricemia and NAFLD (Zhu et al., 2014).

Key words- NAFLD, UA, NASH,

Key message

Uric acid is a metabolic byproduct of purine metabolism, and elevated levels have been linked to various metabolic abnormalities, including obesity, insulin resistance, and dyslipidemia, all of which are also common features of NAFLD. Several studies have investigated the relationship between uric acid and NAFLD, although the findings have been somewhat conflicting.patients.

INTRODUCTION

Non-alcoholic fatty liver disease (NAFLD) is defined as a condition where more than 5% of the body's hepatic cells contain fatty deposits without a history of alcohol consumption. This deposition of fat can cause a variety of diseases ranging from simple steatosis to non-alcoholic steatohepatitis (NASH), cirrhosis, liver failure, and hepatocellular carcinoma [1].

The frequency of non-alcoholic fatty liver disease (NAFLD) has increased significantly throughout the past periods, and it has become the prominent reason of liver disease worldwide with a global prevalence of one billion, which can be moderately recognized to the rising prevalence of obesity.[] The global prevalence of NAFLD is 24%, with the highest rates are reported from South America, the Middle East, and Asia.

NAFLD is diagnosed when daily alcohol consumption is ≤20 g/day in women and ≤30 g/day in men and other causes of the disease have been excluded (autoimmune, viral, steatogenic drugs, etc.) [2-3]

Recent studies show that NAFLD can be seen in both weak and obese populations [4].

According to epidemiological studies, 30% of the general population has steatosis, 5% of whom develop NASH [1]. NAFLD is considered to be associated with the expression of multi-metabolic disorders [5].

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NAFLD is associated with multiple factors such as hypertension, insulin resistance, diabetes, dyslipidemia, obesity, and hyperuricemia [2,6–8].
Uric acid (UA) is a natural end product of purine metabolism. UA levels being elevated due to factors that cause NAFLD, hyperuricemia itself is a proven cause of NAFLD, independent of obesity or insulin resistance

METHODOLOGY

Present study will be an observational prospective study between January 2023 to June 2024 in patients between age group 25-65 years attend OPD/IPD services at Department of Medicine, Mahatma Gandhi Hospital, Jaipur
• Data will be collected using a pretested pro forma meeting the objectives of the study.
Demographic and anthropometric data will be obtained (age, gender, weight, height, and body mass index (BMI)) and serum biochemistry was assessed including total cholesterol, triglyceride, alanine aminotransferase (ALT), aspartate aminotransferase (AST), gamma glutamyltransferase (GGT), alkaline phosphatase (ALP), total bilirubin, albumin, blood urea nitrogen (BUN), creatinine, UA concentrations.
All biochemical parameters will be received after 8 hours of angle and were measured on a multichannel autoanalyzer.
Hyperuricemia: Hyperuricemia is an elevated uric acid level in the blood. The normal upper limit is 6.8mg/dL, and anything over 7 mg/dL is considered saturated, and symptoms can occur.

AIM OF STUDY

To study the prevalence of hyperuricemia as risk factors associated with severity of NAFLD.

OBJECTIVE

Primary objective

- To assess prevalence of hyperuricemia and relationship with NAFLD patients

Secondary objective

- To assess association OF hyperuricemia as risk factors in NAFLD patients

RESULTS

Table 1: Renal functions test of study population

Renal function	Mean	SD
Uric Acid (mg/dl)	5.46	0.3
Creatinine (mg/dl)	0.68	0.1

The examination of renal function parameters within this study yields important insights into kidney health, focusing on uric acid and creatinine levels. The mean uric acid concentration is determined to be 5.46 mg/dl, with a standard deviation of 0.3 mg/dl, while the mean creatinine concentration is recorded as 0.68 mg/dl, with a standard deviation of 0.1 mg/dl.prevalencehyperuricemia in study population

Hyperuricemia [N (%)]	Frequency	Percentage
	73	22.8

Within the studied population, hyperuricemia was observed to have an incidence of 22.8%, with 73 individuals identified as having elevated uric acid levels.In this comparative analysis of hyperuricemia prevalence between individuals with and without non-alcoholic fatty liver disease (NAFLD), significant differences were observed. Among the 160 participants without NAFLD, 18 individuals (11.2%) were identified as having hyperuricemia. In contrast, among the 160 participants diagnosed with NAFLD, a notably higher proportion, comprising 55 individuals (34.4%), exhibited hyperuricemia. Statistical analysis revealed a highly significant p-value of less than 0.0001, indicating a strong association between the presence of NAFLD and the prevalence of hyperuricemia.

DISCUSSION

The association between uric acid levels and non-alcoholic fatty liver disease (NAFLD) has been a subject of growing interest in recent years. In current study, elevated uric acid levels were significantly associated with NAFLD ($p < 0.0001$), supporting the link between hyperuricemia and NAFLD (Zhu et al., 2014). [9] Uric acid is a metabolic byproduct of purine metabolism, and elevated levels have been linked to various metabolic abnormalities, including obesity, insulin resistance, and dyslipidemia, all of which are also common features of NAFLD. Several studies have investigated the relationship between uric acid and NAFLD, although the findings have been somewhat conflicting.

CONCLUSION

The association between uric acid levels and non-alcoholic fatty liver disease (NAFLD) has been a subject of growing interest in recent years. In current study, elevated uric acid levels were significantly associated with NAFLD ($p < 0.0001$), supporting the link between hyperuricemia and NAFLD (Zhu et al., 2014). [295] Uric acid is a metabolic byproduct of purine metabolism, and elevated levels have been linked to various metabolic abnormalities, including obesity, insulin resistance, and dyslipidemia, all of which are also common features of NAFLD. Several studies have investigated the relationship between uric acid and NAFLD, although the findings have been somewhat conflicting.

REFERENCES

1. Neuschwander-Tetri, B.A.; Caldwell, S.H. Nonalcoholicsteatohepatitis: Summary of an AASLD Single Topic Conference. Hepatology 2003, 37, 1202–1219.
2. LaBrecque D.R., Abbas Z., Anania F., Ferenci P., Khan A.G., Goh K.L. Nonalcoholic fatty liver disease

DOI: 10.69605/ijlbpr_13.7.2024.122

and nonalcoholicsteatohepatitis. J. Clin. Gastroenterol. 2012;48:467–473.
3. Ratziu V., Bellentani S., Cortez-Pinto H., Day C., Marchesini G. A position statement on NAFLD/NASH based on the EASL 2009 special conference. J. Hepatol. 2010;53:372–384.
4. Sookoian S., Pirola C.J. Systematic review with meta-analysis: Risk factors for non-alcoholic fatty liver disease suggest a shared altered metabolic and cardiovascular profile between lean and obese patients. Aliment. Pharmacol. Ther. 2017;46:85–95.
5. Marchisello S., Di Pino A., Scicali R., Urbano F., Piro S., Purrello F., Rabuazzo A.M. Pathophysiological, Molecular and Therapeutic Issues of Nonalcoholic Fatty Liver Disease: An Overview. Int. J. Mol. Sci. 2019;20:1948.
6. Fan J.G., Saibara T., Chitturi S., Kim B.I., Sung J.J.Y., Chutaputti A. What are the risk factors and settings for non-alcoholic fatty liver disease in Asia-Pacific? J. Gastroenterol. Hepatol. 2007;22:794–800.
7. Miyake T., Kumagi T., Furukawa S., Tokumoto Y., Hirooka M., Abe M., Hiasa Y., Matsuura B., Onji M. Non-alcoholic fatty liver disease: Factors associated with its presence and onset. J. Gastroenterol. Hepatol. 2013;28:71–78.
8. Wu S.J., Zhu G.Q., Ye B.Z., Kong F.Q., Zheng Z.X., Zou H., Shi K.Q., Lin L., Braddock M., Huang W.J., et al. Association between sex-specific serum uric acid and non-alcoholic fatty liver disease in Chinese adults. Medicine. 2015;94:1–10
9. Zhu Y, Hu Y, Huang T, Zhang Y, Li Z, Luo C, et al. High uric acid directly inhibits insulin signalling and induces insulin resistance. BiochemBiophys Res Commun 2014;447(4):707–714.