Original Article

Frequency of Hyperuricemia in Patients with Heart Diseases

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ABSTRACT

Objective: To evaluate the frequency of hyperuricemia (HU) with ischemic and hypertensive cardiac disease.
Study Design: Descriptive study
Place and Duration of Study: This study was conducted at the Dept. of Medicine at Khyber Teaching Hospital (KTH) Peshawar from November 2022 to February 2023.
Materials and Methods: Sixty study samples were collected from cardiology and the different medical wards of KTH. After the recruitment of subjects according to the inclusion criteria, subjects underwent phlebotomy for serum uric acid. The data was then organised and analysed in SPSS software version. 26.
Results: Out of the sixty subjects included in the study, 35 subjects were males while 25 were females. Subjects had a mean age of 55.4 ± 4 years. 26 patients had HU while 34 patients had ischemic or hypertensive cardiac disease in the absence of raised uric acid levels. Out of 35 males, 11 males had hyperuricemia. Whereas out of 25 females, 9 had HU. HU was observed in 40% of the ischemic heart disease patients and 45% of the hypertensive heart disease patients.
Conclusion: Our study concludes that there is high frequency of HU among patients with ischemic and hypertensive heart disease. This indicates a high disease burden of HU patients.

Key Words: Ischemia; Hypertension; Hyperuricemia; Myocardial Infarction

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INTRODUCTION

Uric acid has been identified as the metabolic end product of purine nucleosides that arise from both dietary and endogenous nucleic acid sources. The total amount of uric acid within the human body may differ between sexes but ranges between 600mg for females to around 1200 mg for males. However, in gout affected individuals this value may rise from 18000 to 30000 mg. Uric acid is excreted from the body via the urinary and the gastrointestinal tract.[1]

The relation regarding the establishment of a possible correlation between cardiovascular disease (CVD) and uric acid first came into existence nearly six decades ago. It has since been reported in various studies about hyperuricemia (HU) and a range of cardiac diseases including ischemic and hypertensive cardiac disease, heart failure, obesity, diabetes, stroke and metabolic syndrome.[2-5]

Studies have reported that uric acid levels >7.0 mg/dL have a greater risk for developing coronary heart disease (CHD).[4,6] HU is the state when the uric acid levels exceed 7.0 mg/dL. This is the point where uric acid begins to forms crystals in the human body.[7,8]

The lack of data on the subject especially in our local population makes it adamant to consider undertaking a research study that could potentially evaluate and establish a relation between raised uric acid levels and heart disease. The aim of this article is to evaluate the frequency of hyperuricemia with ischemic and hypertensive cardiac disease in patients presenting to a tertiary care hospital of Khyber Pakhtunkhwa (KPK).

MATERIALS AND METHODS

This descriptive study was carried out in the Dept. of Medicine at Khyber Teaching Hospital (KTH) Peshawar from November 2022 to February 2023. Sixty study samples were collected from cardiology and the different medical wards of KTH. After the recruitment of subjects according to the inclusion criteria, subjects underwent phlebotomy for serum uric acid. The blood samples were processed in the Hospital lab. The cut off for hyperuricemia was kept at >7mg/dL from the

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literature. The data was then organised and analysed in SPSS software version. 26. It was presented in tables.

RESULTS

Out of the sixty subjects included in the study, 35 subjects were males while 25 were females. Subjects had a mean age of 55.4 ± 4 years. 26 patients had hyperuricemia while 34 patients had ischemic or hypertensive cardiac disease in the absence of raised uric acid levels. Table 1.

The results of the study also found that out of 35 males 11 male had hyperuricemia. Whereas out of 25 females 9 had hyperuricemia. Table 2.

40 subjects had ischemic heart disease while the rest 20 had hypertensive heart disease. Hyperuricemia was observed in 16 (40%) of the ischemic heart disease patients and 9 (45%) of the hypertensive heart disease patients. Table 3.

Table No.1: Shows overall frequency of Hyperuricemia

Hyperuricemia	Frequency	Percentage
YES (>7.22 mgs/dl)	26	43.33%
NO (2.5-7.21 mgs/dl)	34	56.66%
TOTAL	60	100 %

Table No.2: Hyperuricemia with Gender wise Distribution

Hyperuricemia	Males	Females	Total
YES (>7.22 mgs/dl)	15	11	26
NO (2.5-7.21 mgs/dl)	20	14	34
TOTAL	35	25	60

Table No.3: Hyperuricemia with Disease Status

Disease Status	Hyperuricemia	
	Yes	No
Ischemic Heart Disease	16	25
Hypertensive Heart Disease	9	12

DISCUSSION

Our study results indicate that HU was observed in 16 (40%) of the ischemic heart disease patients and 9 (45%) of the hypertensive heart disease patients. In corroboration to our study few other studies have also reported HU as a risk factor for hypertensive heart disease. One such study found out that nearly one third of untreated hypertensive patients, also have HU.[9] Another study by Kuwabara et al, had similar results.[10] It was also noted in various studies that in order to treat or properly manage hypertensive heart disease it was imperative to treat the concomitant HU in these patients.[11,12]

It is of utmost importance here that HU is linked to ischemic events and atherosclerosis.[9,11] Based on the microenvironment, uric acid may act as an anti-oxidant or an oxidant.[13] When there is ischemic stress, there is promotion of a pro inflammatory state which leads to endothelial dysfunction contributing towards atherosclerosis and CVD.[14]

Various studies have reported the relation of HU with cardiac disease. A study carried out on African population found out that HU subjects show a strong relation of developing myocardial infarction and stroke.[15] The present study not only identified a link between HU and cardiac disease but also highlights the need for a healthier life style in preventing, treating and managing cardiovascular disease.[16,17]

CONCLUSION

Our study concludes that there is high frequency of Hyperuricemia among patients with ischemic and hypertensive heart disease. This indicates a high disease burden of hyperuricemia patients.

Author's Contribution:

Concept & Design of Study:	Uzma Anwar
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Final Approval of version:	Uzma Anwar

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

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