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Hyperuricemia; a Common Risk Factor of Hypertension among Pakistani People

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ABSTRACT

Objective: To determine association of hypertension with high blood level of uric acid among people of Pakistan.

Study design & duration: This is a prospective study, started in July 2019 and completed in February 2020 after eight months.

Setting: This study was conducted in Medical unit of Bahawal Victoria Hospital Bahawalpur.

Patients & Methods: All those patients with hyperuricemia reporting to study hospital were included in this study. Patients were divided into two groups. Sample size was calculated using WHO calculator. Hypertensive patients were kept in group-A and patients with normal blood pressure were kept in group-B. There were total 300 cases, 150 in each group. According to inclusion criteria fasting blood uric acid level should be increased, blood pressure should be more than normal limit according to age in 3 different days of a week. All data collected was documented in a predesigned performa. Calculations were done using SPSS software version 24. Results were calculated in the form of percentage for qualitative variables and means, SD were calculated for quantitative variables. P-value less than 0.05 were considered significant. Confidence interval was 95% with 5% margin of error.

Results: There were total 300 cases comprising on 155(51.7%) male and 145(48.3%) female cases. In group-A with hypertension 45(15%) were male and 105(35%) were female cases. While in group-B with normal blood pressure 110(36.7%) were male and 40(13.3%) were female cases. Range of age was 20-80 years with mean age of 46.78±8.52 years. In group A patients with hypertension, 73(24.3%) cases were having hyperuricemia. In group-B out of 150 cases 5(3.3%) were having hyperuricemia including 4(2.7%) male and one female.

Conclusion: There is strong association between hyperuricemia and hypertension among Pakistani population and most commonly found among female patients

Key words: Hypertension, hyperuricemia, metabolic syndrome, blood pressure

INTRODUCTION

Hyperuricemia is a metabolic disease which can lead to many complications in body.¹ About 70% cases with hyperuricemia are symptomatic and remaining are asymptomatic. It has two types of presentations, either joint pain due to uric acid crystals deposition and second presentation is in the form of hypertension.² Increased uric acid level in serum may cause hypertension, Chronic renal disease, insulin resistance, obesity and cardiovascular complications. This study is about association of hyperuricemia to hypertension.³ Hypertension is a major disease worldwide and mostly cause is unknown.⁴ It depends on many factors but hyperuricemia is an independent risk factor. The mechanism by which hyperuricemia induces HTN can be due to pre renal vascular injury due to uric acid high level, leading to activation of renin angiotensin system, sodium retention and leading to development of hypertension. This is one of few suggested mechanisms of HTN development due to increased serum uric acid level. As many studies have reported hyperuricemia as a risk factor of hypertension but it has to be determined whether all hypertensive patients have hyperuricemia or not.⁵ Studies have shown that hyperuricemia is associated with diastolic hypertension more than systolic hypertension.⁶

Patients & Methods

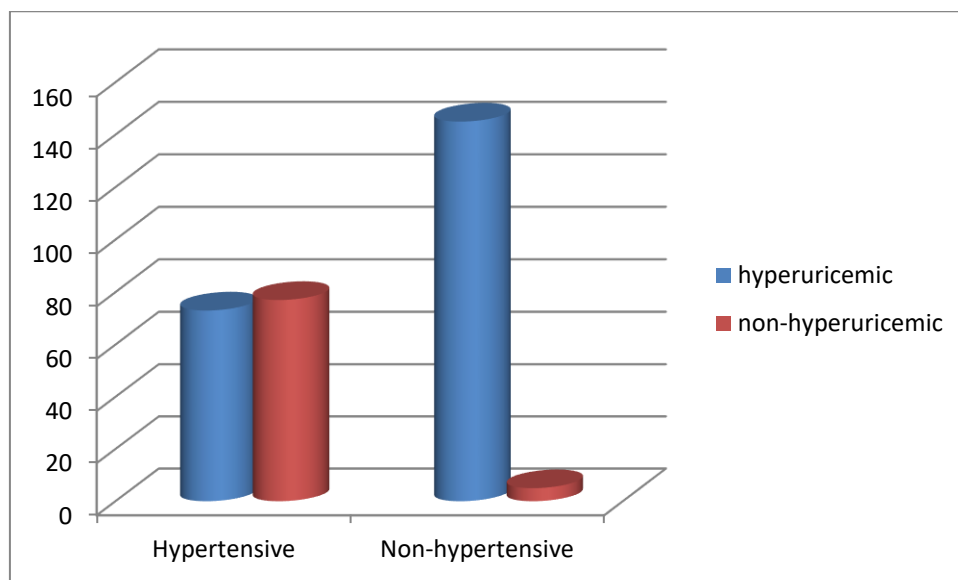
This is a prospective study conducted in a tertiary care hospital started in July 2019 and completed in February 2020 after eight months duration. Objective of study was to determine association of hyperuricemia with hypertension. All those patients with hyperuricemia reporting to study hospital were included in this study. Patients were divided into two groups. Sample size was calculated using WHO calculator. Hypertensive patients were kept in group-A and patients with normal blood pressure were kept in group-B. There were total 300 cases, 150 in each group. According to inclusion criteria fasting blood uric acid level should be increased, blood pressure should be more than normal limit



according to age in 3 different days of a week. All data collected was documented in a predesigned performa. Calculations were done using SPSS software version 24. Results were calculated in the form of percentage for qualitative variables and means, SD were calculated for quantitative variables. P-value less than 0.05 were considered significant. Confidence interval was 95% with 5% margin of error. Consent was taken from all cases in the study group and from ethical committee of the study hospital prior to commencing the study. Patients were selected via randomized controlled trials irrespective of age and gender.

Results

There were total 300 cases comprising on 155(51.7%) male and 145(48.3%) female cases. There were 23(7.7%) cases between 20-30 years, 42(14%) between 31-40 years, 95(31.7%) between 41-50 years, 71(23.7%) between 51-60 years and 69(23%) were above 60 years age. In group-A with hypertension 45(15%) were male and 105(35%) were female cases. While in group-B with normal blood pressure 110(36.7%) were male and 40(13.3%) were female cases. Range of age was 20-80 years with mean age of 46.78 ± 8.52 years. In group A patients with hypertension, 73(24.3%) cases were having hyperuricemia. In group-B out of 150 cases 5(3.3%) were having hyperuricemia including 4(2.7%) male and one female.



DISCUSSION

Hypertension is a much common disease all over the world. It is associated with many complications. It is more common in advancing age and among obese people. There are multiple risk factors of hypertension.⁷ Hyperuricemia is a metabolic disease which can lead to many complications in body. About 70% cases with hyperuricemia are symptomatic and remaining are asymptomatic. It has two types of presentations, either joint pain due to uric acid crystals deposition and second presentation is in the form of hypertension. Increased uric acid level in serum may cause hypertension, Chronic renal disease, insuline resistance, obesity and cardiovascular complications.^{8,9} This study is about association of hyperuricemia to hypertension. This is a

prospective study conducted in a tertiary care hospital started in July 2019 and completed in February 2020 after eight months duration. Objective of study was to determine association of hyperuricemia with hypertension. All those patients with hyperuricemia reporting to study hospital were included in this study. Patients were divided into two groups. Sample size was calculated using WHO calculator. Hypertensive patients were kept in group-A and patients with normal blood pressure were kept in group-B. There were total 300 cases, 150 in each group. According to inclusion criteria fasting blood uric acid level should be increased, blood pressure should be more than normal limit according to age in 3 different days of a week. All data collected was documented in a predesigned performa. In group-A with hypertension 45(15%)



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associated with diastolic hypertension more than systolic hypertension.¹¹ Further studies are needed in this aspect to be conducted on huge groups to determine association of hyperuricemia and hypertension.

CONCLUSION

From this study it is concluded that hyperuricemia is commonly found among middle age and old age people and has association with increased blood pressure. Hypertension was mostly found among female population. On this basis of results we can say that control of blood uric acid level can reduce blood pressure among majority of patients.

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