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ORIGINAL ARTICLE

Association of Serum Uric Acid and Hypertension among Hypertensive Patients in Local Community

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ABSTRACT

Aim: To analyze the association of hypertension and serum uric acid levels among hypertensive subjects in local community of Mirpurkhas

Study Design: Descriptive non interventional study

Place and Duration of Study: Various Clinical Setups of Mirpurkhas, Sindh, Pakistan from 1st July 2021 to 31st December 2021.

Methodology: Four hundred and seventeen patients were recruited via rao-soft formula based on confirmed diagnosis of hypertension irrespective of age and gender. A serum uric acid was also measured.

Results: Two hundred and sixty nine (64.5%) were males and 148 (35.5%) were females. There were 117 (28.05%) had age from 55-65 years and 132 (31.65%) had more than 6 years. Moreover in male gender 73 (27.18%) had uric acid value from 9.1 to 10 mg/dL while in female 37 (25%) had uric acid value from 8.1 to 9 mg/dL.

Conclusion: Male gender was more prone towards hypertension and uric acid abnormal values. Mainly the adult patients were more affected having age more than 55 years and had chronic hypertension. Further it was revealed that uric acid values found high in hypertensive patients in both genders i.e. male and female. The values were of more than 8 mg/dL. Proper diagnosis will be the integral part to diagnose the patients particularly in chronic problems.

Key words: Association, Serum uric acid, Hypertension, Local community

INTRODUCTION

Hypertension considered as silent killer if untreated. A report was generated in 2016 from meta-analysis and it was declared that out of total population of world near about 30% of the population was hypertensive.[1,2] High mortality rate is noticed in cardiovascular problems due to high blood pressure.[3] The rate of prevalence was enormous high in under developed countries. It may be defined as pressure generated in arterial wall. This is concise definition.[4,5] Systolic hypertension and diastolic hypertension, if the pressure is increased during contraction of the arterial wall called systolic and in diastolic the pressure increased during relaxation phase.[6-8]

Many risk factors were noted during various studies such as age, high consumption of coffee and nicotine, level of cholesterol disturbance and glycemic level irregularities. Moreover with these risk factor another important risk factor were also evaluated i.e. serum uric acid. The normal values of serum uric acid are different based on gender.[9-11] In male the normal value is from 3.4 to 7.0 mg/dL and in female it is from 2.6-6.0 mg/dL. If the values more than these values it is termed as hyperuricemia. The level of risk association were evaluated by national health and nutrition examination survey and it was reported that hypertension were two fold increased if value of serum uric acid more than 5.5 mg/dL and for every 0.1mg/dL increased the risk factor for getting high blood pressure were increased up to 38%.[12,13]

The pattern of association were different in different communities such as in Chinese the association was found in more than 90 years of age, while in Korean locality the association was found in less than 40 years of age. In Japan the risk is increased in only more than 40 years of age if serum uric acid level were increased. Another studies suggested that serum uric acid is independent risk factor of hypertension rather than dependent. High level of serum uric acid may also leads to different cardio vascular problems.[14] A study was conducted on 3157 patients and it was strongly concluded the presence of relationship between high serum uric acid level and high blood pressure.[15] Another meta-analysis reported that serum uric acid may also associated with prehypertension but still no more evidence was found.[16,17]

Therefore, the current study was designed to analyze the association of hypertension and serum uric acid levels among hypertensive subjects in local community of Mirpurkhas based on age and gender.

MATERIALS AND METHODS

This descriptive non interventional study was designed to analyze the levels of serum uric acid and their association with hypertension based on age and gender among local community recruited from various clinical setups of Mirpurkhas, Sindh, Pakistan from 1st July 2021 to 31st December 2021.. A total of 417 patients were recruited via rao-soft formula based on confirmed diagnosis of hypertension irrespective of age and gender. A serum uric acid was also measured. The sample selections were based on purposive. The detail analysis sheet were formed which contains age, gender, locality, history of hypertension, values of hypertension, levels of serum uric acid and their association. The data was entered and analyzed through SPSS-25.

RESULTS

There were 269 (64.5%) males and 148 (35.5%) females. Thirty five (8.97%) belonged to age 25-34 years, 76 (18.22%) belonged to age 35-44, 89 (21.34%) belonged to age 45-54 years, 117 (28.05%) belonged to age 55-65 years and 98 (23.50%) belonged to age more than 65 years. One hundred and thirty seven (32.85%) were from urban areas and 280 (67.15%) from rural areas (Table 1).

According to history of hypertension, 59 (14.15%) had less than 1 year, 36 (9.63%) had 1-2 years, 98 (23.50%) had 2-4 years, 92 (22.06%) had history from 4-6 years and 132 (31.65%) had history more than 6 years (Table 2).

According to uric acid in males, 47 (17.47%) between 3.4-7 mg/dL, 65 (24.16%) between 7.1-8 mg/dL, 52 (19.33%) between 8.1-9 mg/dL, 73 (27.18%) between 9.1-10 mg/dL and 32 (11.90%) had more than 10 mg/dL (Table 3).

Table 4 showed uric acid values among female patients. Out of total 148 samples, 21 (14.19%) between 2.4-6 mg/dL, 14 (9.46%) between 6.1-7 mg/dL, 50 (33.78%) between 7.1-8 mg/dL, 37 (25%) between 8.1-9 mg/dL and 26 (17.56%) had more than 9 mg/dL.

Table 1: Demographic information of the patients (n=417)

Variable	No.	%
Gender		
Male	269	64.5
Female	148	35.5
Age (years)		
25-34	37	8.87
35-44	76	18.22
45-54	89	21.34
55-65	117	28.05
< 65	98	23.50
Locality		
Urban	137	32.85
Rural	280	67.15

Table 2: History of hypertension among enrolled samples

History of hypertension (years)	No.	%
< 1	59	14.15
1-2	36	8.63
2-4	98	23.50
4-6	92	22.06
> 6	132	31.65

Table 3: Frequency of uric acid among males

Uric Acid Values (mg/dL)	No.	%
3.4-7	47	17.47
7.1-8	65	24.16
8.1-9	52	19.33
9.1-10	73	27.18
> 10	32	11.90

Table 4: Frequency of uric acid among females

Uric Acid Values (mg/dL)	No.	%
3.4-6	21	14.19
6.1-7	14	9.46
7.1-8	50	33.78
8.1-9	37	25.00
> 9	26	17.56

DISCUSSION

The study covers both urban and rural community. The study was focus to assess the serum uric acid among hypertensive samples. The same study was conducted in South Korea but only focus only rural community. That study was also analyze the relationship between hypertension and serum uric acid. In our study mainly serum uric acid was found high while South Korean study was also given us same result but independent variable based on age.[18] The association of serum uric acid and hypertension was also found in some other studies.[19,20] In current study we had not assess the body mass index because it's not directly associated with serum uric acid with hypertensive samples and another study was also given same results that is independent variable and no strong association.[21]

CONCLUSION

The study concluded that male gender was more prone towards hypertension and uric acid abnormal values. Mainly the adult patients were more affected having age more than 55 years and had chronic hypertension. Further it was revealed that uric acid values found high in hypertensive patients in both genders i.e. male and female. The values were of more than 8 mg/dL. Proper diagnosis will be the integral part to diagnose the patients particularly in chronic problems.

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