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ORIGINAL RESEARCH PAPER

Ethnic variation of uric acid level among population in greater Kamrup district

Doungel Nomi[1], Borah Pollov[2], Thakuria KD[3]

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ABSTRACT

Introduction: *In about 16th century gout sounded like a disease out of a novel. Purine leads to high level of uric acid which are deposited in the joints and causing the attack of gout. Gout which is the disease since antiquity is an acute, often recurrent arthritis mediated by the crystallization. Genetic or other influences are important modulator for the serum uric acid level. Many studies have been conducted worldwide to identify the risk factors for hyper uricemia including ethnic, enzymatic and environmental predisposition.* ***Materials and methods:*** *The present study was conducted among different communities in Greater Kamrup District. Samples were collected by stratified random sampling technique. Communities selected were Ahom; Adivasi; Bodo, Bengali, Karbi, Manipuri and Marwari. Serum uric acid level in different communities were evaluated and compared.* ***Results:*** *Uric acid level of Boro community is higher in comparisons to other communities. Uric acid level of Ahom community is found higher in comparison to Manipuri, Bengali, Adivasi and Marwari. Sex wise uric acid level is high in case of males 5.69 mg/dl, compared to females 4.95mg/d1.* ***Conclusion:*** *From the present study, it can be concluded that different communities of Greater Kamrup district depicts different uric acid levels and association with sex. This finding can be associated with dietary habits of different communities. It can be placed in the context of overall health promotion, disease prevention and disease treatment with appropriate attention to nutritional needs in different communities.*

Keywords: *Gout; uric acid; community; purine.*

INTRODUCTION

In about sixteenth century gout sounded like a disease out of a novel.[1] That is probably because this joint disease famously afflicted many luminaries from the past. It has been theorized these historical figures had gout because they had money to enjoy red meat, sea food and all other food rich in purine.[2] Purine leads to high level of uric which are deposited in the joints and causing the attack of gout. Gout which is the disease since antiquity is an acute, often recurrent arthritis mediated by the crystallization.[3]

Some indigenous people such as Polynesians of Pukapuka in the Cook Island have relatively high serum uric acid level despite on traditional diet that is low in red meat.[4] So, genetic or other influences that are also an important modulation of the serum uric acid level.[5] Many studies have been conducted worldwide to identify the risk factors for hyper uricemia including ethnic, enzymatic and environmental predisposition.[6] Among the acquired factors, reversible life style factor contribute to increased blood uric acid concentration. These factors were suggested to be higher Purine diet, alcohol consumption and obesity.[7]

Objective is to evaluate serum uric acid level in different communities of Greater Kamrup District and compared.

MATERIALS AND METHODS

The present study was conducted among different communities in Greater Kamrup District. Samples were

Address for correspondence
[1] Associate Professor
Mobile: +919864025015
Email: nomidoungel@gmail.com
Department of Physiology
Tezpur Medical College, Tezpur, Assam, India
[2] Assistant Professor (**Corresponding Author**)
Mobile: +919435030948
Email: drpollov@gmail.com
Department of Anaesthesiology
Assam Medical College and Hospital, Dibrugarh, Assam
[3]Assistant Professor
Department of Physiology
Tezpur Medical College, Tezpur, Assam, India

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collected by stratified random sampling technique. Communities selected were Ahom, Adivasi, Bodo, Bengali, Karbi, Manipuri and Marwari. Serum uric acid level in different communities were evaluated and compared.

The study was carried out over a period of 2 years with total number of 280 subjects. 40 subjects from each community consisting of equal numbers of males and females (1:1). They belong from the different community with different occupations and socio-economic status, food habits. They gave informed consent to participate in the study. Subjects are evenly distributed in the age group of 25 years to 70 years.

Estimation of serum uric acid was done within 48 hours of collections of the blood samples. Using a calorimeter the biochemical estimations was done. Uricase converts uric acid to allantoin and hydrogen peroxide. The hydrogen peroxide formed further reacts with a phenolic compound and 4 aininoantipyrine by the catalytic action of peroxidase to form a red coloured quinoneimine dye complex. Intensity of the colour formed is directly proportional to the amount of uric acid present in the sample.

RESULTS

280 patients of Gout were included in this study, out of which 140 were males and 140 were females. Subjects are evenly distributed in the age group of 25 years to 70 years.

Table 1 High uric acid level among respondents of different community

Community	Total respondent	High uric acid
Boro	40	13
Ahom	40	6
Karbi	40	6
Adivasi	40	5
Bengali	40	2
Manipuri	40	2
Marwari	40	0

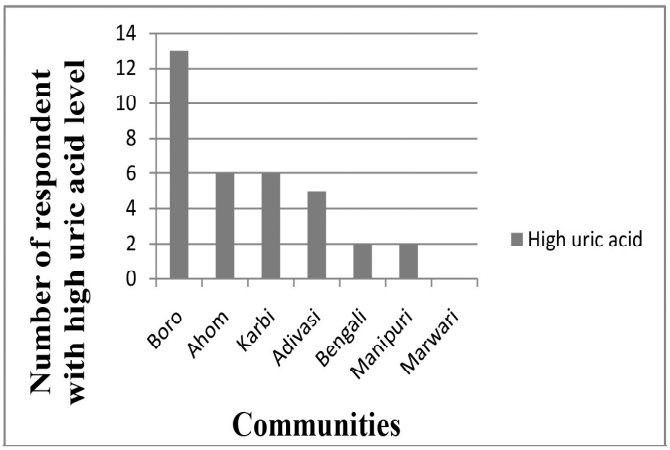

Figure 1 Distribution of high uric acid level among the respondents of different communities

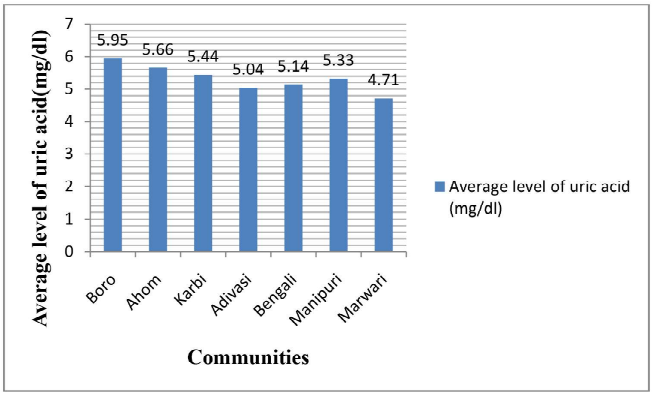

Figure 2 Average uric acid level of different community

Figure 2 Depicts uric acid level of Boro community is higher in comparisons to other communities. Uric acid level of Ahom community is found higher in comparison to Manipuri, Bengali, Adavasi and Marwari.

Table 2 Variation of uric acid level of different community

Source of variation	SS	df	MS	f
Between groups	40.43	6	6.73	5.64
Within group	325.84	273	1.19	
Total	**366.27**	**279**		

Table 2 depicts variation in high uric acid level recorded among the Boro community followed by Ahom, Karbi, Adivasi, Bengali, Manipuri significantly. No cases of high uric acid level were recorded in Marwari community.

Table 3 Uric acid level of different community vs sex

Community	Male (mg/dl)	Female (mg/dl)	t value (mg/dl)
Boro	6.69	5.22	4.1
Ahom	6.02	5.29	3.09
Karbi	6.09	4.79	3.75
Adivasi	5.43	4.65	2.3
Bengali	5.74	4.53	3.75
Manipuri	4.8	5.85	3.8
Marwari	5.09	4.34	3.57
Overall	5.69	4.95	6.12

Significant at 5% level of significance

Table 3 depicts Sex wise uric acid level is high in case of males 5.69 mg/dl, compared to females 4.95mg/d1. The average difference of uric acid level of male and female is found to be statistically significant. t - value is 6.12 mg/dl. Incidence of high uric acid level recorded among the Boro community followed by Ahom, Karbi, Adivasi, Bengali, Manipuri significantly. No cases of high uric acid level were recorded in Marwari group.

Table 3 also illustrated comparative tendency of high uric acid level is more among males as compared to females except among the Manipuri community.

DISCUSSION

It was observed in categories wise distribution the incidence of high uric acid level was nil in vegetarian categories. In Marwari, out of 40 respondent there is no record of high uric acid. Uric acid in Marwari community is 4.71 mg/dl, much less than other communities. The beneficial effect of dairy proteins relates to the fact that this type of protein cause excretion of urate and contain much lower level of purine. The findings are found to be in consistence with study carried out at different parts of the world.[8,9]

In the non-vegetarian group, often they consumed alcohol daily according to the social customs and religious rituals. It was observed that serum uric acid level in Boro community i.e. 5.95 mg/dl which was comparatively more than the other communities and this finding are similar with studies carried out by different workers.[6,10,11]

Sex wise differences have often been observed and the differences are reported to result from differences in sex hormones. Uric acid level is higher in male is 5.69 mg/dl when compared with female is 4.95 mg.

Sex wise incidence high uric acid was recorded among males in all the communities except the Ahom community. These findings are in consistence with observations of different workers.[4,12,13]

The strength of this study is that it gives some general clue over the altered serum uric acid level in relation to diet. In conclusion it is observed that intake of alcohol and not the purine intake is a strong risk for hyperuricaemia and for the development of gout. And vegetables which are rich in dietary fibres are protective against hyperuricaemia and gout.

CONCLUSION

Serum uric acid level shows significant variation in different communities like Boro community have high uric acid level in comparison to other communities. Because of their dietary habits. It was seen that there is no significant rise of high uric acid level in Marwari who are strictly vegetarian.

Sex wise high uric acid level is found in males compared to females and the average difference is statististically significant which is similar to all the community except Manipuri.

Serum uric acid may be a marker for the presence of an adverse cardiovascular diseases and it is strongly related to hypertension; hyperlipidemia; diabetes mellitus.

So, from the above study it can be concluded that different communities of Greater Kamrup district depicts different uric acid levels and association with sex. These findings can be associated with dietary habits of different communities. It can be placed in the context of overall health promotion, disease prevention and disease treatment with appropriate attention to nutritional needs in different communities.

A further bio-chemical analysis of blood in persons of different communities, both vegetarian and non-vegetarian dietary habit may help us to know different health problem in our society. Also, a thorough study is needed regarding the quantitative and qualitative evaluation of the constituent of non- vegetarian diet in different community without changing their dietary habit.

So, the above study reflects obvious scope for further work on this observation.

Conflict of interest: None declared.

Ethical clearance: Taken.

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