

Original Articles

SERUM URIC ACID VALUES IN HYPERTENSION

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Abstract

Serum uric acid values in 40 males with untreated hypertension were compared with 40 age matched controls. No significant difference in the mean uric acid values was noted between the hypertensive and control groups. The serum uric acid values in hypertensive group were correlated more significantly with ponderal index than with serum cholesterol (JPMA 29:234, 1979).

Introduction

Hypertension is one of the important risk factors influencing the development of atherosclerosis. It is not known for certain, as to how often other genetically determined risk factors such as diabetes, hyperlipidaemia and hyperuricaemia co-exist in groups of patients with hypertension. In Pakistan initial studies on the spectrum of hypertension are being undertaken. In this paper our findings on serum uric acid levels are reported in untreated hypertensive males and are compared with the values in the age matched normotensive men.

Material and Methods

Forty untreated hypertensive men with ages ranging between 20-65 years, attending the PMRC Hypertension Clinic, during 1978-79 were investigated. Diabetes as an associated condition was present in 10 patients. The protocol of the Hypertension Clinic has already been described (Haider et al., 1976). Hypertension was diagnosed when B.P. was above 150 mm systolic and 90 mm diastolic on 3 separate occasions in uncomplicated cases. The control group consisted of 40 normotensive males attending the hospital for minor ailments. All patients and controls had a complete history especially focussing on the de-

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tails of drug intake, gout, kidney disease and other conditions liable to cause alteration in blood uric acid levels. Those with blood urea above 40mg%, a history suggestive of significant kidney disease, gout, recent drug intake and other relevant conditions were excluded.

Ponderal index was calculated as height (inches)/3 weight (lbs). Serum cholesterol was estimated by the method of Abell (Abell et al., 1952) and uric acid by Conways method, modified by Gradwohl (1970).

Results

Table I shows the mean values of serum uric acid, ponderal index and blood cholesterol in hypertensive and normotensive males.

Table I: Mean Uric Acid, Ponderal Index and Cholesterol Values in 40 Hypertensive and 40 Age Matched Normotensive Males

Parameters	Hypertensive group (n = 40)	Control group (n = 40)	Significance
* Uric acid (mg%)	5.48 ± 0.71	5.45 ± 1.00	N.S.
Ponderal index	12.54 ± 0.69	12.90 ± 0.58	N.S.
**Serum cholesterol (mg%)	217.95 ± 40.45	187.12 ± 29.65	P < 0.001

N.S. = Not significant

*t = 0.18, DF = 38; N.S.

**t = 3.94, DF = 38; P < 0.001

The mean uric acid in 40 hypertensive males was 5.48 + 0.71 mg% and in normotensive 5.45 + 1.0 mg%; the difference was not significant. In both the study groups 9 out of 40 subjects had serum uric acid levels above 6.0 mg%. However, values of 7.0 mg% or above were recorded in 1 (2.5%) hypertensive patient and 3 (7.5%) of the controls.

The mean ponderal index in hypertensive was 12.54 + 0.65 and in normotensives 12.90 + 0.58; the difference was not significant.

The mean serum cholesterol level was 217.95 mg% in the hypertensive group and in the controls 187.12 mg%, the difference being significant (P < 0.001).

Table II shows correlation of serum uric acid values with other variables i.e., ponderal index and serum cholesterol, in 40 patients of hypertension. The correlation between serum

uric and cholesterol was not significant, while the correlation of uric acid with ponderal index approached significance ($r = -0.22$; $P < 0.2$).

Table II: Correlation of Serum Uric Acid Concentration with Other Variables (Cholesterol and Ponderal Index) in 40 Males with Hypertension

	Serum cholesterol	Ponderal index
r	2.12	-0.22
P	N.S.	P < 0.20

N.S. = Not significant

Discussion

There are number of factors which can influence serum uric acid values. Some substances such as theophylline, ascorbic acid, acetaminophen and levedopa can cause a spurious rise of urate levels (Liang and Fries, 1978). Similarly other medications like low doses of aspirin and diuretics can raise the blood uric acid levels, although few of these elevations are associated with pathologic complications (Stanbury et al., 1972).

In patients with hypertension uric acid levels could be influenced by the intake of diuretics and a possible kidney damage resulting from a long standing hypertension. We confined our study to untreated cases of hypertension and those with a history of drug intake and serious kidney diseases were excluded. Also, patients and controls with an elevated blood urea (>40 mg%) were not included in the study.

In our series, although serum cholesterol values were significantly higher in the hypertension group, the serum uric acid level showed no difference between the cases and controls. The uric acid levels showed more correlation with ponderal index than with the cholesterol levels in the hypertensive groups. In a recent British Study (Ramsay 1979), hyperuricaemia present in 18 out of 73 hypertensive men was related significantly with alcohol intake, serum aspartate transaminase and obesity. The author observed that hypertension and hyperuricaemia were related in part through their common association with frequent alcohol use and went on to conclude that high urate concentration (>8.4 mg%) in a man with untreated hypertension was highly suggestive of heavy alcohol consumption.

Although alcohol intake can hardly be in-

voked in this study our results are somewhat similar in that the association of hypertension and hyperuricaemia has not been confirmed in the absence of factors such as alcohol. Serum uric acid in this group of hypertensive men was correlated more significantly with the ponderal index than with serum cholesterol.

Acknowledgement

We wish to thank the technical staff of PMRC Research Centre for their help throughout the study. Thanks are also due to Mr. Nasiruddin for typing the manuscript.

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