



# Assessment of the relationship between serum uric acid level and atherosclerosis burden in patients undergoing coronary angiography in Ekbatan (Farshchian) hospital, Hamadan 2015

Mohammadreza Bayanati <sup>a</sup>, Soudabeh Keshtkar <sup>b,\*</sup>,  
Maryam Farhadian <sup>c</sup>, Fatemeh Ashtarani <sup>d</sup>

<sup>a</sup> Department of Cardiology, School of Medicine, Hamadan University of Medical Sciences, Hamadan, Iran

<sup>b</sup> Clinical Research Development Unit of Farshchian Heart Center, Department of Cardiology, School of Medicine, Hamadan University of Medical Sciences, Hamadan, Iran

<sup>c</sup> Modeling of Noncommunicable Disease Research Center, Department of Biostatistics, School of Public Health, Hamadan University of Medical Sciences, Hamadan, Iran

<sup>d</sup> Clinical Research Development Unit of Farshchian Hospital, Hamadan University of Medical Sciences, Hamadan, Iran

Received 14 March 2017; received in revised form 10 June 2017; accepted 13 June 2017

## KEYWORDS

Atherosclerosis;  
Uric acid;  
Coronary artery;  
Angiography;  
Iran

**Abstract** *Background:* Nowadays, cardiac disease is the most widespread reason of death in most countries such as Iran. Some studies have correlated serum uric acid level with risk of death in the patients of acute coronary syndrome. The study aimed to determine if there is any correlation between serum uric level and atherosclerosis burden.

*Material and methods:* In this cross-sectional study, all the patients underwent coronary angiography in Hamadan's Ekbatan Hospital in 2015 and were studied in terms of demographic, serum lipid profile, blood glucose and uric acid. Data were obtained from patients' medical records, registered in data sheet and analyzed by spss16 statistical software.

*Results:* 140 patients participated in this study of whom 60% were male and 40% female with age mean of  $62.92 \pm 11.21$  years old. Blood uric acid's mean was  $6.39 \pm 2.16$  mg/dl and based on coronary artery involvement range was single vessel disease ( $6.17 \pm 1.91$ ), two vessel disease ( $6.56 \pm 2.17$ ), three vessel disease ( $6.32 \pm 2.01$ ), mild or minimal or patent ( $6.78 \pm 3.16$ ) and in ectatic or slow flow ( $7.30 \pm 0.86$ ) mg/dl, respectively. According to the results of Kruskal–Wallis test, no significant relation was observed between uric acid level and the range of

\* Corresponding author. Fax: +98 81 38381686.

E-mail address: [soudabehkeshtkar@yahoo.com](mailto:soudabehkeshtkar@yahoo.com) (S. Keshtkar).

coronary artery involvement ( $P = 0.60$ ). But, the mean of serum uric acid level in severe ischemic heart disease was significantly more than acute coronary syndrome ( $P = 0.04$ ).

**Conclusion:** Blood uric acid is not a dependent predictive risk factor of atherosclerosis but through effects on other risk factors it may increase the risk of heart disease.

© 2017 Association for Research into Arterial Structure and Physiology. Published by Elsevier B.V. All rights reserved.

## Introduction

Increasing life expectancy, the rapid growth of urbanization, technology development, followed by decreased physical activity and increased psychological stress have caused high spread of cardiovascular disease risk factors.<sup>1</sup>

Cardiovascular diseases are the most common cause of death in many countries, including Iran, where more than one third of all deaths (39%) are caused by these diseases. Poor nutrition, physical inactivity, smoking, obesity, high blood pressure, diabetes and dyslipidemia are the most important risk factors for cardiovascular disease.<sup>2</sup>

Some researchers have reported that uric acid may be an independent risk factor for cardiovascular and kidney diseases and reduction of blood uric acid levels has cardiovascular and renal benefits.<sup>3</sup>

Recent epidemiological studies have shown that risk factors for metabolic syndrome are not able to justify all cardiovascular events observed in this syndrome.<sup>4</sup>

In some studies, in addition to the above factors, the risk factors, including inflammatory markers, microalbuminuria and hyperuricemia are mentioned. Some of these studies have described insulin resistance as the underlying cause of the metabolic syndrome while increased insulin secretion may reduce the renal excretion of uric acid and sodium and then increased blood uric acid levels increase incidence of cardiovascular events.<sup>5–7</sup>

In contrast, some researchers have reported that uric acid concentration is not a helpful marker to predict cardiovascular disease.<sup>8</sup>

Given the conflicting results about the association between uric acid and cardiovascular disease, we decided to survey correlation between the extent of coronary lesions and blood uric acid.

## Methods

In this cross sectional study, all patients admitted to the Ekbatan hospital in 2015 that were candidates for coronary angiography according to the AHA<sup>e</sup> (initial manifestation of chronic chest pain and heart failure, acute myocardial infarction, symptomatic post MI<sup>f</sup> patients, unstable angina according to Guideline class 1, 2A, 2B) were evaluated. Patients were evaluated for left ventricular ejection fraction and wall motion abnormalities by echocardiography while lipid profile, uric acid and blood sugar were checked.

Test results, physical examination, and past medical history were recorded in their medical records. In this study, referring to patients' medical records, age and height, the demographic characteristics of the patients, coronary angiography result; LVEF<sup>g</sup> and tests results were recorded in researcher's sheets. The patients with renal impairment based on serum creatinin were excluded.

To determine the relationship between blood uric acid by the extent of atherosclerosis and other variables, Kruskal–Wallis test, Mann–Whitney and Pearson correlation coefficient were used and the significance level was set at "0.05".

## Results

A total of 140 patients were examined in this study. The mean age was  $62.92 \pm 11.21$  years; in terms of gender, 60% were male and 40% female. The mean body mass index was  $26.36 \pm 3.91$  kg per square meter; 29.48% of patients had diabetes, 43.57% had hypertension and 34.29% were smokers.

The mean value of uric acid was  $6.39 \pm 2.16$ , the minimum being 2 and the maximum 13 mg/dl. Based on the result of Pearson correlation coefficient between the variables EF and uric acid incomplete inverse association was observed with increasing uric acid, EF was reduced ( $r = -0.16$ ), but a statistically significant relationship ( $P = 0.057$ ) was not found.

The highest frequency of coronary artery disease on angiography results was 3VD<sup>h</sup> (30.7%), SVD<sup>i</sup> (24.3%) and Mild, Minimal or patent (24.3%). The mean of uric acid in these groups was: SVD (6.17 mg/dl), 2VD (6.56 mg/dl), 3VD (6.32 mg/dl), Mild or Minimal or patent (6.78 mg/dl) and Ectatic or Slow flow (7.30 mg/dl). The Kruskal–Wallis analysis results showed the relation between the mean blood uric acid and the extent of coronary artery disease was not statistically significant ( $P$  value = 0.60) (Table 1).

The mean blood uric acid in different subgroups of gender, age (under 50 years, above-50 years), history of smoking, high blood pressure, PCI<sup>j</sup>/CABG<sup>k</sup> and body mass index (below 30 and above 30 kg/m<sup>2</sup>) did have not a significant statistical difference. Average blood uric acid in patients with diabetes and without diabetes, respectively, was 8.5 mg/dl and 6.66 mg/dl, and the difference between

<sup>g</sup> Left ventricular ejection fraction.

<sup>h</sup> Three vessel disease.

<sup>i</sup> Single vessel disease.

<sup>j</sup> Percutaneous coronary intervention.

<sup>k</sup> Coronary artery bypass graft.

<sup>e</sup> American heart association.

<sup>f</sup> Myocardial infarction.

Download English Version:

<https://daneshyari.com/en/article/5599186>

Download Persian Version:

<https://daneshyari.com/article/5599186>

[Daneshyari.com](https://daneshyari.com)