

Hypertension and Hyperuricemia

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Abstract

Essential hypertension affects about 25% of the world population and is considered as a major causal factor of myocardial infarct, congestive heart failure, stroke, end-stage renal disease and also risk factor for type 2 diabetes. Hypertension is implicated in 13% of deaths globally. The essential hypertension is a multifactorial and complex disease and the number of contributory factors in its etiology are increasing each year as being appreciated in recent decades. Recent experimental and clinical studies in animals and humans have implicated uric acid in the early onset mechanism of essential hypertension in children and adolescents. An association exists also between uric acid, cardiovascular diseases and mortality, metabolic syndrome, subclinical

atherosclerosis, stroke, kidney diseases, type 2 diabetes and endothelial dysfunction. Asymptomatic hyperuricemia was also a strong risk factor for resistant hypertension in the elderly. Epidemiological data suggest that hyperuricemia and gout is becoming more prevalent worldwide, probably as the consequence of Westernization of diet and life style, obesity and the increased availability of certain medications. These data suggest that the prevalence of hyperuricemia in the adult population is 20%-40% and this continues to increase over time.

The aim of this article was to review the results of the most recent studies about the possible relation between elevated uric acid levels and the

onset or worsening of hypertension and other cardiovascular, renal and metabolic diseases.

All these studies support a role for high serum uric acid levels ($>6\text{mg/dl}$ or 60mg/l) in hypertension-associated morbidities and should bring attention to physicians in regard to their patients. The relationship between serum uric acid and hypertension is lost with increasing age and with duration of hypertension.

The regular physical exercise, Mediterranean diet and decreased consumption of beverages with high fructose corn syrup may lower the risk for hypertension. It is postulated that xanthine oxidase inhibitors would be of greater benefit than uricosuric agents in reducing the cardiovascular, renal and cerebral risk as they both lower serum uric acid and block the production of proinflammatory reactive oxygen species (ROS). Urate lowering therapy is associated with normalization of both serum uric acid and blood pressure in younger population. In contrast, in older hypertensive population, urate lowering therapy have minimal effects on blood pressure but appear to improve cardiorenal endpoints.

Keywords: Hypertension, uric acid, hyperuricemia, risk.