



RESEARCH ARTICLE

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HYPERURICEMIA ASSOCIATED WITH MICROALBUMINURIA - WHAT ARE THE POSSIBLE LINKS?

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ARTICLE INFO

Article History:

Received 04th January, 2020
Received in revised form
19th February, 2020
Accepted 16th March, 2020
Published online 29th April, 2020

Key Words:

Hyperuricemia, Microalbuminuria, MEANINGS.

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ABSTRACT

Abstract: Goals Hyperuricemia and microalbuminuria are considered cardiovascular risk factors. The objective of this work was to determine the likely mechanisms of this association and to suggest the possibility of a relevant relationship between the two anomalies. **Patients and Methods:** We conducted a cross-sectional study from January to December 2017. Patients with vascular and metabolic risks were followed up in outpatient nephrology consultations or in hospital in the nephrology department of the Brazzaville University Hospital. We routinely measured uricemia in all patients and microalbuminuria in patients with hyperuricemia. **Results:** Microalbuminuria was frequently associated with hyperuricemia in patients during hypertension (26 patients) in 10 hyperuricemic patients all 10 had pathologic microalbuminuria, diabetes (20 patients) 9 hyperuricemia, 8 microalbuminuria, renal colic (15 patients) 5 hyperuricemia, 5 microalbuminuria.

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Citation: Richard Loumingou. "Hyperuricemia associated with microalbuminuria - what are the possible links?", *International Journal of Development Research*, 10, (04), 34999-35000.

INTRODUCTION

Hyperuricemia and microalbuminuria are biological parameters frequently found in vascular and metabolic diseases and are considered cardiovascular risk factors [1,2,3]. The development of microalbuminuria during diabetes and hypertension (hypertension) is a major risk factor for renal failure and cardiovascular morbidity [4,5]. Hyperuricemia is also associated with high cardiovascular risk situations; obesity, renal failure, type II diabetes, hypertension and gout [6]. The objective of this work was to determine the likely mechanisms of this association and to suggest the possibility of a relevant link between the two anomalies for a comprehensive management.

PATIENTS AND METHODS

From January to December 2017 in the nephrology department of the Brazzaville University Hospital in consultation or hospitalization, we conducted a cross-sectional study. We measured uricemia in patients at vascular and metabolic risk and microalbuminuria in hyperuricemic patients.

We have included in the study:

- Patients who had hyperuricemia and pathologic microalbuminuria

- Patients who were able to perform a workup including microalbuminuria, cholesterol, creatinine, uroculture, and blood count.

We excluded from the study:

- Patients with renal impairment with an MDRD creatinine clearance of less than 60 mL/min.
- Patients treated with diuretics
- Patients with a urinary tract infection, or any other infectious syndrome.
- Patients with diffuse or generalized edema.

We have defined:

- Hyperuricemia: uricemia greater than 70mg/l (420 micro moles per litre).

Microalbuminuria:

- On urination above 200mg/ml.

RESULTS

86 patients met our criteria.

Epidemiological aspects

- 57 men, 29 women, sex ratio 1.9
- Average age 44 years (extremes 28 60 years).

DISCUSSION

The association of several metabolic abnormalities in the same patient is Known for many years.

The **LIFE** study showed the relationship between decreased uricemia and improved cardiovascular parameters [7] In syndrome X described by Reaven in 1988 hyperuricemia is associated with microalbuminuria and several metabolic abnormalities [8]. KANG and COLL have suggested a possible correlation between endothelial dysfunction (the mechanism implicated in microalbuminuria) and uric acid during preeclampsia [9]. Several cardiovascular risk factors are common to both abnormalities. Microalbuminuria is evidence of generalized endothelial dysfunction and is associated with hypertension, obesity, hyperinsulinism, dyslipidemia, hyperfibrinogenemia [10 11,]. Hyperuricemia is associated with chronic renal failure, type II diabetes, hypertension, obesity, metabolic syndrome [12,13]. Hyperuricemia is incriminated in the genesis of hypertension by the development of renal arteriolar and interstitial lesions inducing tissue ischemia and activation of the renin angiotensin aldosterone system [14]. In our observations the vascular changes and lesions induced by hypertension and diabetes are the hypothesized mechanisms of microalbuminuria and hyperuricemia. In normotensive and non-diabetic patients followed for gout, obesity and hypercholesterolemia, microalbuminuria appears to be secondary to hyperuricemia via endothelial dysfunction and arteriolar lesions related to hyperuricemia.

Conclusion

The association between microalbuminuria and hyperuricemia is frequently found in vascular and metabolic pathologies. Microalbuminuria is probably secondary to hyperuricemia through the vascular and hemodynamic changes induced by hyperuricemia. It seems relevant to systematically look for microalbuminuria in hyperuricemic patients even in the absence of hypertension and diabetes, and to propose a global hygieno-dietary and therapeutic management including both abnormalities.

Conflicts of Interest: None.

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