A RIBOFLAVIN CONTROLLED STATUS OF SYMPTOMATIC GEOGRAPHIC TONGUE AND HIGH BLOOD PRESSURE

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Conflicts of interest: The authors do not have any conflict of interest to declare.

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Keywords:

geographic tongue,
high blood pressure,
riboflavin

A 24 years man presented with a 3-month history of changing (in the location, size and shape) patches of red areas on the tip and sides of the tongue. He reported that the lesions often heal in one area and then move (migrate) to a different part of his tongue, a burning sensation when eating as vegetarian, hot or acidic foods or drinks and daily alcohol.

The examination revealed a red patch on the top of the tongue with a slight raised white border, scales and erythema on the lips and also on the seborrheic areas and no other signs as lymphadenopathy, dental disorders, no changes on the jugal mucosa (Figure 1).

The mycological exam was negative, so a presumtive diagnosis of geographic tongue was made. The serum level of riboflavin (Vitamin B2) was 68 µg/L (N=180-295 µg/L) and the blood pressure 165/97 mmHg.

The patient was assured about the benign nature of the tongue condition and underwent empirical topical treatment with mouth rinses with physiological saline solution. Riboflavin was supplemented with 4.2 mg/day.

After six weeks there was no important clinical improvement of the visual condition of the tongue and facial skin, but there were no local sensations,

Figure 1. Geographic tongue, cheilitis, seborrheic-like dermatitis

the blood pressure was 147/90 mmHg and the riboflavin level was 192 µg/L. He was referred to a cardiologist for blood pressure control.

Riboflavin derivatives have direct antioxidant properties and increase endogenous antioxidant status as essential cofactors in the glutathione redox cycle (1). The flavoprotein coenzymes derived from riboflavin are important for the synthesis, conversion and recycling of niacin, folate and vitamin B6, and for the synthesis of all heme pro-

teins, including haemoglobin, nitric oxide synthases, P450 enzymes, and proteins involved in electron transfer and oxygen transport and storage (1, 2). Flavoproteins are also co-factors for the regulation of thyroid hormones (1), in the metabolism of essential fatty acids in brain lipids (3) and the absorption and utilisation of iron (4). Doses of this magnitude for up to eight weeks are also required to replenish riboflavin levels and correct enzymatic activity in the 10%–15% of the population who have an inherited restriction in their ability to absorb riboflavin (4, 5). Administration of riboflavin at a dose of 1.6 mg/day attenuated the hypertensive effect of MTHFR 677TT genotype patients. The reduction in blood pressure following riboflavin supplementation (1.6 mg/day for 16 weeks) suggested that the excess risk of hypertension linked to this genetic variation could be overcome by optimizing the riboflavin status (6). Administration of riboflavin at a dose of 4 mg/day for eight weeks had the greatest effects on both riboflavin status and benefits to haematological parameters, increasing the number of circulating red blood cells and the concentration of haemoglobin (4).

Vitamin B2 deficiency can produce angular cheilitis, glositis with irregular denudation of papillae, seborrheic-like lesions. Administration of riboflavin diminished the patient's tongue sensations as well as his high blood pressure.

These preliminary research findings in just one patient suggest the importance of riboflavin and a possible link between some mucocutaneous and vascular conditions. Obviously, future and larger studies are needed to confirm those correlations.

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