

Dietary counseling and nephrolithiasis

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Nephrolithiasis affects about 10% of people living in developed countries and its incidence has increased along with other issues related to diet changes in the population such as obesity, hypertension and *diabetes mellitus*.¹

Despite being influenced by other factors, urine composition is largely determined by the individual's diet makeup.² Several studies showed that the typical diet of industrialized countries - rich in sodium, animal protein and sugar and fructose sweetened beverages, causes a high excretion of calcium, uric acid, oxalate and phosphorus; and a decrease in citrate and urinary pH, thus favoring the formation of stones.³⁻⁵ On the other hand, an adequate intake of fruits and vegetables appears to be a protective factor against stone formation, because it is directly related to the ingestion of antilithogenic factors such as potassium, magnesium, citrate and phytate.^{3,6}

Thus, nutritional counseling is an affordable and safe strategy to help prevent the occurrence and recurrence of kidney stones for both healthcare professionals and patients. It is important to note that to obtain better results, dietary recommendations should be established according to the type of stone and characteristics of 24h urine analysis.² For instance, dietary tips for those who make calcium oxalate stones are not exactly the same used for people who make

uric acid stones. And for those whose stones are of infectious origin (struvite), there was no influence of diet composition.² Therefore, a habit that should be advised to all individuals with nephrolithiasis is increased fluid intake to decrease the urinary concentration of stone formation components. Although the exact amount has not yet been established, these patients should be encouraged to drink a minimum of 30 ml/kg of body weight of fluid per day.²

In order to prevent this problem in the population, the most appropriate strategy is to encourage a balanced diet. A recent publication that examined the association between dietary habits and the risk of nephrolithiasis in more than 50,000 people concluded that the main protective factors were the high magnesium intake from fresh fruits and fiber from whole grains. Furthermore, when compared to participants who had a high intake of meat (> 100 g/day), those who had a moderate (50-99 g/day) or low (< 50 g/day) intake had 20% and 48% less chance of developing stones, respectively.⁷

This issue of the BJN includes the paper in which Gordiano *et al.* analyzed the main dietary and metabolic characteristics of 31 patients with nephrolithiasis treated at a Nephrology clinic and compared the results with those obtained from a control group.⁸ Although only a

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small number of patients were included, the nutritional profile found (88% were diagnosed with overweight or obese according to BMI) and the high prevalence of hypertensive individuals (64%) showed the close relationship between these metabolic disorders and nephrolithiasis.

With respect to the investigation of diet despite the limitations inherent to the methodologies used to assess dietary intake, the authors observed a high consumption of protein and sodium, with calcium, potassium and fluid intake below recommended levels in both groups; and as the authors aptly pointed out, these are dietary behaviors which favor the recurrence of nephrolithiasis. These findings stress the importance of nutrition counseling and monitoring of individuals affected by this problem, which besides affecting quality of life, may consequently lead to irreversible loss of kidney function.

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