

OBJECTIVE

Our objective is to describe the urinary metabolic factors related to lithogenesis (calcium, oxalate, phosphate, and uric acid), inhibitor factors (citrate, magnesium) in patients with Crohn's disease.

INTRODUCTION

Crohn's disease is an inflammatory intestinal illness that may be associated to several complications and manifestations which are secondary to the base inflammatory process. Moreover, extra-intestinal manifestations have been found in approximately 30% of the patients. One of these manifestations is the nephrolithiasis and the formation of calculi is more common in these patients than in general population, especially for calcium oxalate calculi. The frequency of lithiasis in this group of patients vary from 12 to 28%, while in the general population this number is around 1 to 14%. Many factors have been associated to its occurrence, such as urinary volume, pH, oxalate and magnesium excretion. In Crohn's disease the majority of the calculi are constituted of calcium oxalate, due to the greater absorption and urinary excretion of this compound. The oxalate derived from diet is usually not absorbed when it is compounded with intestinal calcium; however, in cases of malabsorption or surgical resection of the intestine, it remains free due to the calcium fixation to fatty acids. Consequently, all these factors favor the hyperoxaluria.

MATERIAL AND METHODS

In a conjoined effort from the Gastroenterology (Brasilia clinics hospital) and Sabin Laboratory of Clinical Analysis, 16 patients with Crohn's disease, with ages from 15 to 62, were evaluated during the period from January of 2007 to March of 2008. These patients had involvement of the small intestine or small intestine and colon, while all diagnosed with Crohn's disease. The following conditions were excluded: patients with renal failure (creatinine greater than 1.5 mg / dL), hyperthyroidism. The assessment includes serum and urine measurements of metabolic substances related to kidney lithiasis and calculi analysis. The blood analyses include creatinine, uric acid, calcium, magnesium and gasometry for measurement of venous pH and bicarbonate. In 24 hours urine (two samples): oxalate, citrate, magnesium, phosphate, sodium, potassium, chloride were measured, in isolated samples in pH and urinary sediment were measured.

The methodologies employed in biochemistry analyses were the routinely used, with the exception of the pH test which was performed using Celm pH meter instead of the less accurate pH strips.

RESULTS

The 16 evaluated patients, 51.1% were had compromised ileal segment 46.5% have been diagnosed recently (less than 4 years) and 63,8 % had already undergone an intestinal surgical procedure, from which 55.6 % had some ileal segment removal. From the 16 evaluated patients, only 2 did not present nephrolithiasis associated disturbance, 3 patients present with only 1 disturbance and 12 present with 2 or more urinary lithogenic disturbance (Figure 1).

The main urinary metabolic changes were: 62.8% hypocitraturia, 35.6% hypomagnesiuria, 14.6% hyperoxaluria and 18.6% had low urine volume (Table 1). From the 16 tested patients 10 had kidney calculi. Some of these patients underwent intestinal surgery and showed alteration in the oxalate and phosphate saturation.

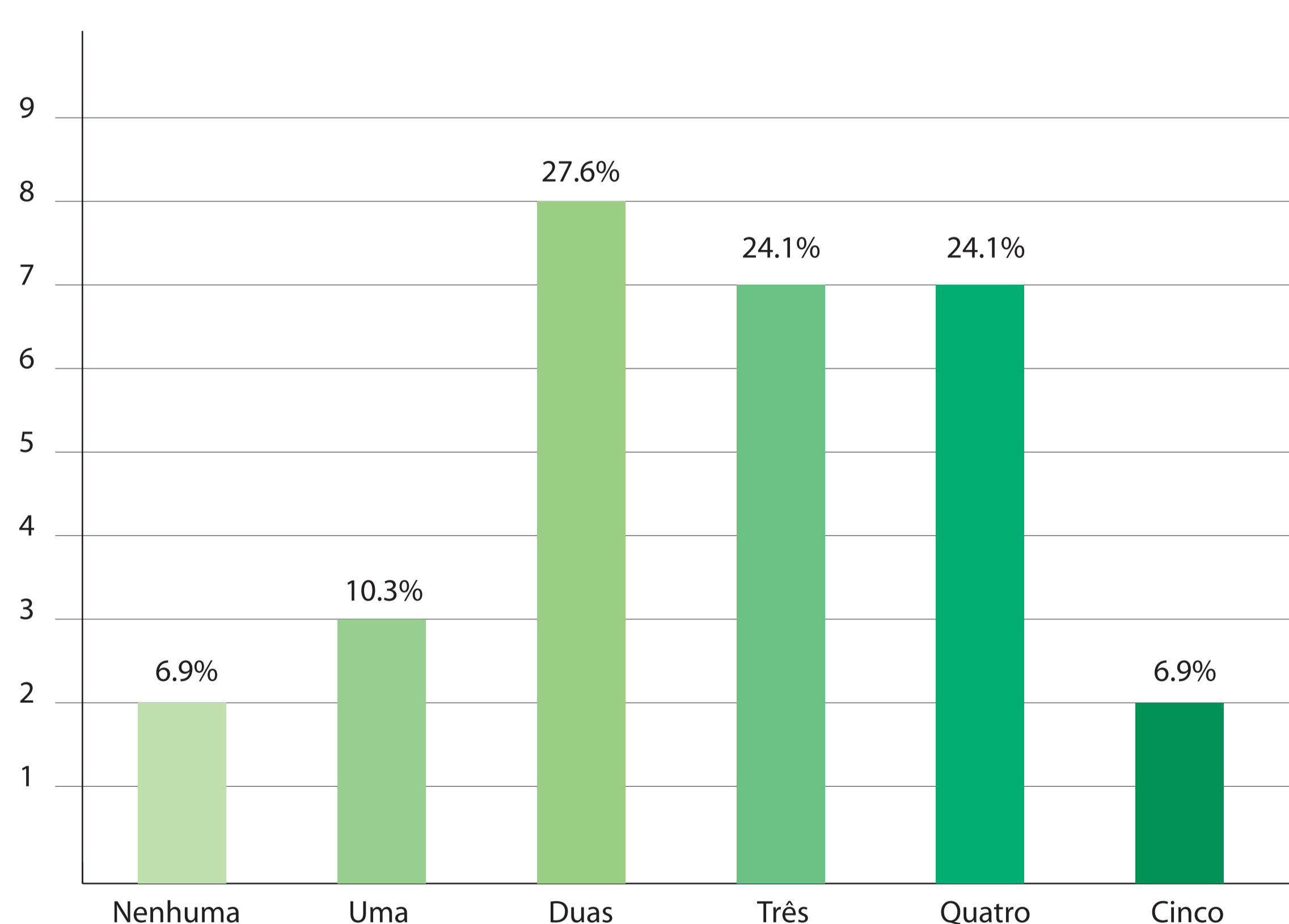


Figure 1: Percentage of metabolic alteration in 24-hour urine sample from patients with Crohn's disease.

Table 1 - Frequency of urinary metabolic alteration potentially linked to lithogenesis.

	n	%
Low urinary volume - 20 ml/kg/24h	2	18,6
Magnesium < 50 mg/24h	6	35,6
Citrate < 320 mg/24h	7	68,2
Oxalate > 40 mg/24h	1	14,6

The frequency we found of patients with renal calculi was higher when compared to similar previous studies. Hypocitraturia e hypomagnesiuria, which are risk factors for renal calculi probably had an active role in calculi formation, indicated by elevated urinary saturation of oxalate, phosphate, and calcium.

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