



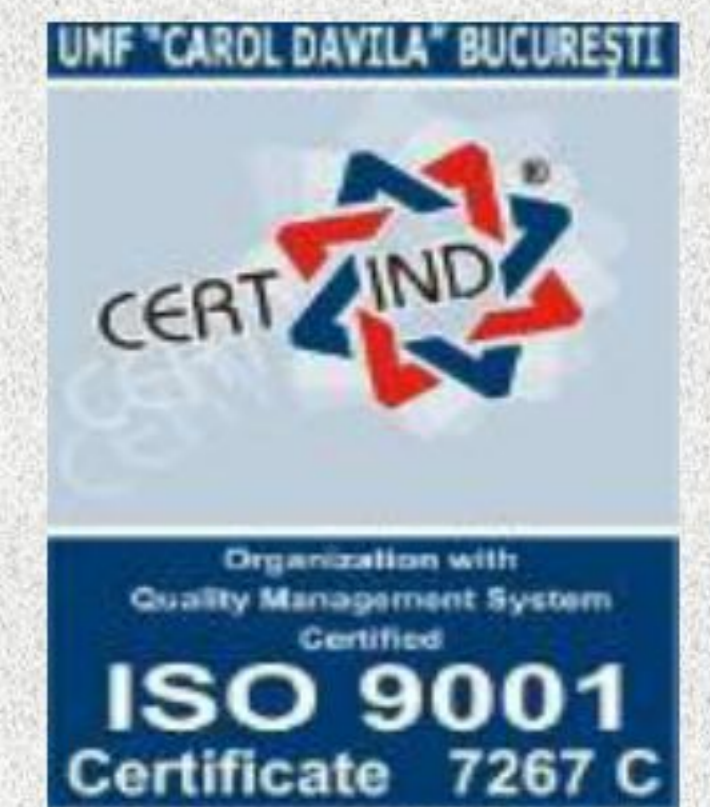
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RELATIONSHIP BETWEEN URIC ACID NEPHROLITHIASIS AND OBESITY

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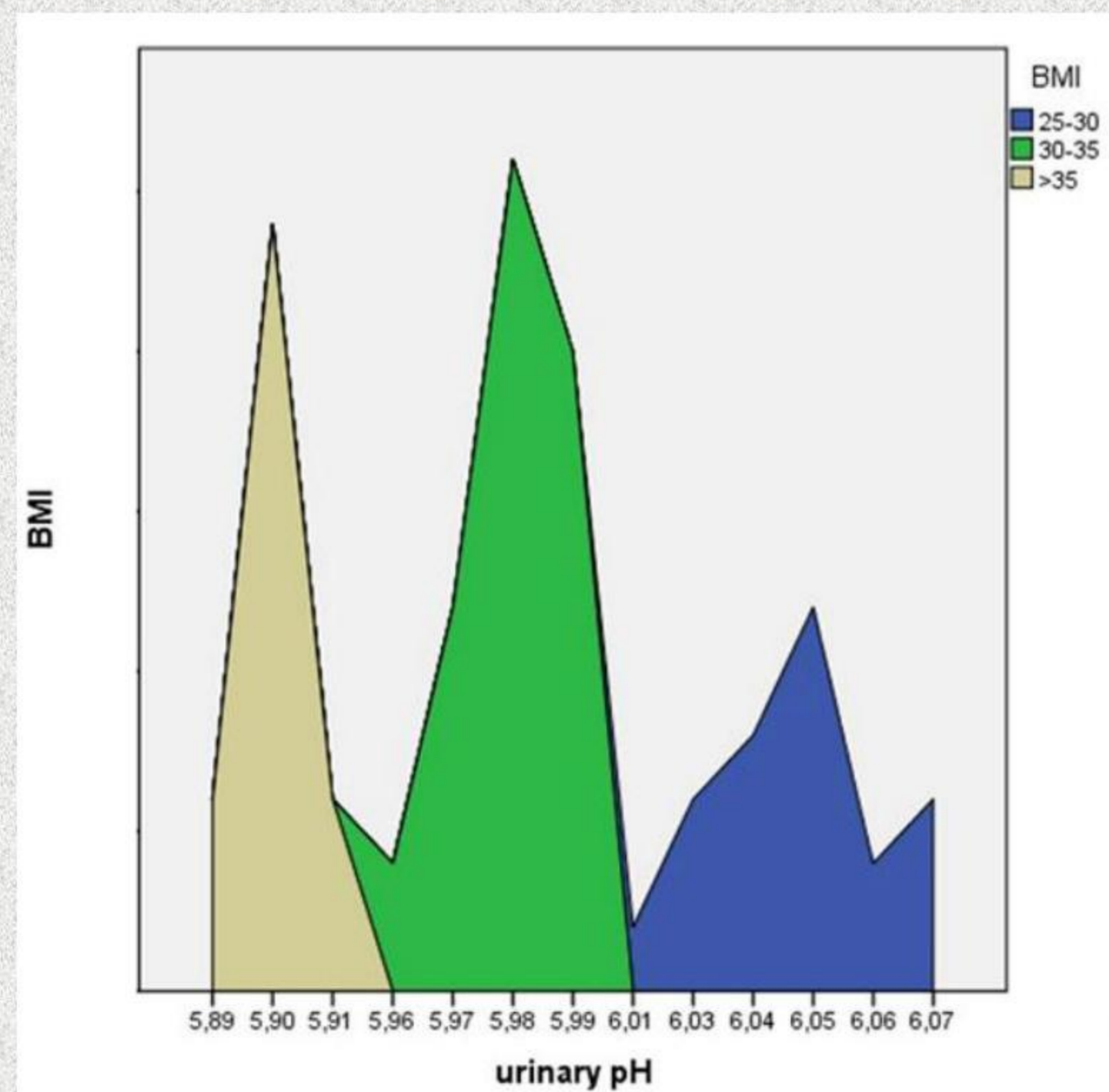
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INTRODUCTION AND AIMS

Previous reports emphasize a greater frequency of uric acid nephrolithiasis in overweight patients. It is unknown if this is a consequence of hyperproteic diet with overproduction of uric acid and excessive acids urinary excretion or there is tubular dysfunction manifested by excessive urinary acidification as a result of insulin resistance. We evaluated the relation between urinary pH and body mass index (BMI) in a group of 208 overweight patients admitted for uric acid nephrolithiasis before and after restricting the diet.

METHODS

In a 3 years period, 226 overweight or obese patients (BMI > 25), aged 34 - 47 years, 128 men and 98 women, were admitted for uric acid nephrolithiasis in both nephrology and urology clinics. Two 24-hours urine samples were collected: one at the time of presentation and one after 23 days of restrictive diet (0.7 g protein/day, low Na and low Ca). The urine samples were kept in a cold environment and urinary pH was measured in both samples. Patients' weight was noted at the time of the urine collection and BMI was calculated. We also recorded urine creatinine and serum albumin. Medication which could have influence urinary pH was stopped 48 hours before urine collection. 14 patients were excluded from the study because they presented various conditions that could have interfere with measurement of urinary pH (urinary infections, inflammatory bowel diseases, renal tubular acidosis, infection stones) and 4 were excluded as a result of inability to comply with a restrictive diet. The valid group of 206 patients were divided in 3 subgroups depending on BMI: 25 - 30, 30 - 35, > 35. The relationship between urinary pH and BMI was analyzed before and after diet restriction in the 3 subgroups. We analyzed the correlation between urinary pH and the other measured variables.



RESULTS

At the moment of the first urine collection, we found a strong inverse linear relation between urinary pH and BMI: mean urinary pH was 6.05, 5.98 and respectively 5.90 at a BMI of 25 - 30, 30 - 35 and respectively > 35 ($p < 0.001$). This association was maintained at the second urine collection (after diet protein restriction); the mean urinary pH was 6.09, 5.99 and respectively 5.89 in the 3 subgroups ($p < 0.001$). We also found an inverse relation between urinary creatinine and urinary pH, but no correlation between serum albumin and urinary pH in any of the moments of urine collections.

CONCLUSIONS

In this study we found a significant inverse relation between urinary pH and body weight, and between urinary pH and urinary creatinine, independently of the diet and in no correlation with serum albumin. We concluded that the high frequency of uric acid nephrolithiasis in overweight patients is determined by an increased acidity of urine secondary to insulin resistance rather than an overproduction of acids resulting from catabolizing a high-protein diet.

ACKNOWLEDGEMENTS

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