WHICH NUTRITIONAL FACTORS ARE RELEVANT IN THE RECCURENCE OF KIDNEY STONES? IMPORTANCE OF THE RECALL QUESTIONAIRE.

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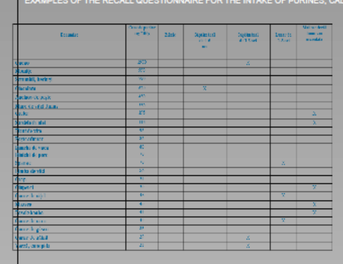
OBJECTIVES

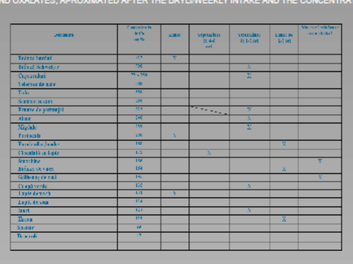
It is well known that nutritional factors, such as nutrients rich in purines, amino acids, urates and oxalates, can influence the frequency of kidney stones (KS), and this can lead to many complications, pain, infections and even chronic kidney disease. The importance of nutritional questionnaires in assessing the occurrence of KS has not been so extensively considered. We studied the results of the diet habits compared with clinical and biochemical parameters.

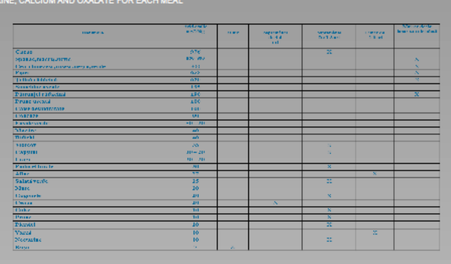
METHODS

We developed a nutritional questionnaire (NQ) based on the recall method, with the following structure: anthropometric dates, daily and weekly diet intake of purines, calcium and oxalates. 112 patients with KS were given the NQ, and the data were compared with laboratory parameters: hemoglobin, leucocyte count, serum creatinine and number of KS recurrence. From the NQ the corresponding amounts of purines, calcium and oxalates were calculated using diet tables. Statistical analysis was performed with the GraphPadPrisma and MedCalc programs. We calculated the linear regression for 95% confidence interval, correlation coefficient and the statistical t-test significance. The data was collected in Romanian language and it was adapted to local eating habits.

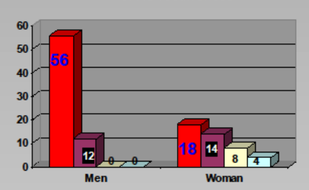
EXAMPLES OF THE RECALL QUESTIONNAIRE FOR THE INTAKE OF PURINES, CALCIUM AND OXALATES, APROXIMATED AFTER THE DAYLI/WEEKLY INTAKE AND THE CONCENTRATION IN PURINE, CALCIUM AND OXALATE FOR EACH MEAL



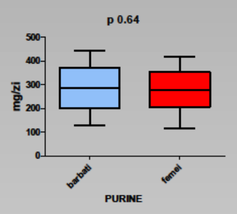




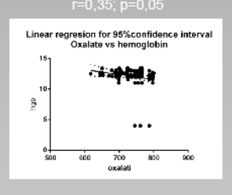
Characteristics of the study group, according to the number of KS recurrences



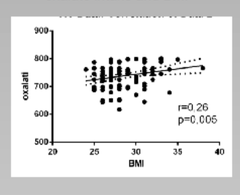
Intake of purines according to gender



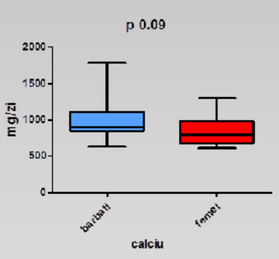
Significant correlation of oxalate intake and hemoglobin; r=0,35; p=0,05



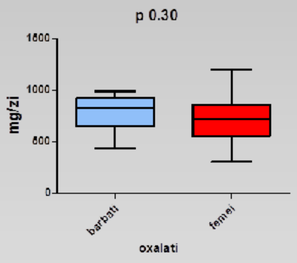
Significant correlation of oxalate intake and BMI

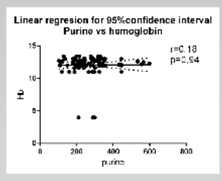


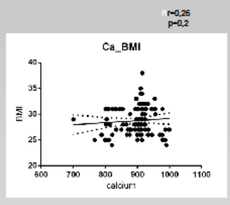
Intake of Calcium according to gender



Intake of oxalates acording to gender



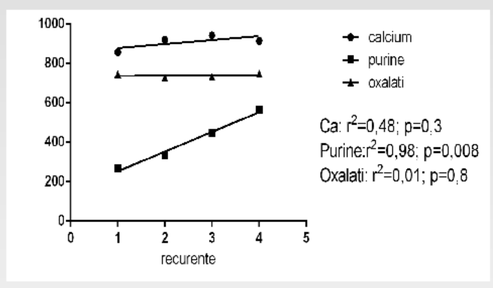




RESULTS

Response to NQ was positive and 112 patients (68 male; 44 female) completed the questionnaire. The mean daily intake of calcium, oxalates and purines (mg/d) was: 893,8; 733,6 and 277,9 respectively. This reflects a high intake of oxalates, a moderate high intake of purines and a low intake of calcium. The recurrence of KS was moderately correlated with the oxalate and purine intake (r=0,45, p=0,04). There was no significant difference regarding the diet intake, gender, body mass index or area of origin. In a regression analysis we found a moderate correlation (r=0,35,p=0,05) of oxalate intake with the hemoglobin levels and a strong correlation (r=0,75, p=0,01) of purine intake with the serum creatinine level.

Intake of purines, calcium and oxalates, according to the number of recurrences; linear regression for 95% confidence interval



DISCUSSIONS: There was a significant correlation between the purine intake and the recurrence of kidney stones, related with the diet habits of the population. It is possible that the serum urates levels were also high, but this was not taken into account. On the other hand, calcium intake does not influence the recurrence of KS, calcium being a more complex ion, with many metabolic interferences. More surprisingly, the statistical data of oxalates intake was not related to the KS recurrences.

CONCLUSIONS

The NQ revealed a high intake of oxalates and purines in the KS patients and a low intake of calcium. The kidney stone recurrence was modestly associated with the oxalate intake and highly correlated with the daily purine intake. The higher hemoglobin levels were due to the concomitant iron and vitamin C intake in the rich-oxalate food. Purine and oxalate diet intake could be controlled in order to lower the KS recurrence. Higher intake of purines can be explained by dietary habits of the population, with a preference for meat.

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