

COMPOSITION AND RISK FACTORS OF KIDNEY STONES: EXPERIENCE IN A NEPHROLITHIASIS UNIT

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INTRODUCTION AND AIMS:

Nephrolithiasis (NL) is a widely prevalent disease in the general population (5.7% in Spain). There are many known risk factors which can lead to stone formation, such as hypertension, diabetes, certain alterations in the urine composition (hipercalciuria, hiperoxaluria, hipocitraturia) and morphological findings such as the "sponge kidney". Our objective was to study the prevalence of risk factors in a sample of patients from our NL unit and their relation with the stone composition.

METHODS:

Retrospective and descriptive study. Patients were enrolled from our NL unit. Anthropometric and analytical data were collected from the hospital records.

RESULTS:

Stone Composition: Calcium oxalate (CO) 84,4%, calcium phosphate (CP) 95,6%, calcium carbonate (CC) 4,7%, magnesium ammonium phosphate (MAP) 47,8%, uric acid (UA) 54,5%, cystine 1,2%, ammonium 0,4%. 76,4% of the stones were composed of a combination of 2 or 3 components.

Anthropometric and analytical data

N	251
Age(y)	49,6 13,5
Sex(male)	63.3%
SBP/DBP(mmHg)	134 19/81 10(37,4%>140/90)
Glucose(mg/dl)	104 25(21.5%>120)
Cholesterol(mg/dl)	210 44(22.7%>240)
Creatinine(mg/dl)	0.95 0.2(4,38%>1,5)
Urea(mg/dl)	36,5 9,9(0,4%>75)
BMI	27 4,7(20.5%>30)
Uric Acid(mg/dl)	4.9 1.4(12,7%>6.5)
Calcium(mg/dl)	9.7 0.5(7,96%>10.5)
Total Protein(g/dl)	7.3 0.5(3.5%<6.5)
Diuresis(ml)	2334 1044(6.7%<1000)
Urinary pH	5,9 1,2
Urinary Creatinine(mg/dl)	60,2(42,5-92,6)
Urinary Uric Acid(mg/dl)	28,2(13-39)(4.4%>65)
Urinary Ca(mg/dl)	9.2(5-15)(16.3%>20)
Urinary P(mg/dl)	40,1(27-59)
Urinary Mg(mg/dl)	4.3(2,8-6,2)
Urinary Na(mEq/l)	84(51-124)
Urinary K(mEq/l)	34(24-47)

We found a negative correlation between age and the presence of calcium oxalate, magnesium ammonium phosphate and cystine in the stone ($p < 0,02$).

Body mass index correlated positively with magnesium ammonium phosphate, uric acid and calcium carbonate ($p < 0,04$).

There was a positive correlation between serum and urine levels of uric acid and its presence as a component of kidney stones ($p < 0,03$), but we found no correlation between serum or urinary calcium and calcium oxalate or calcium phosphate.

We also found no correlation between the morphological findings and stone composition.



Renal Morphology (Intravenous Urography)

Not Relevant	187 (74,5%)
Sponge	63 (25,1%)
Papillary Necrosis	1 (0,4%)

CONCLUSIONS:

The prevalence of hypertension, dyslipidemia and obesity in our sample was lower than expected. The prevalence of kidney sponge, one of the most important predisposing factors is 25.1%, about 43 times higher than that observed in the general population. We also found a strong correlation between stone composition and several NL risk factors, specially obesity. The study of renal morphology and stone composition in subjects with nephrolithiasis is a useful tool to assess patients and adjust the treatment.

