



PP13

The first study of urinary stone composition in the Sultanate of Oman

M.S. Al-Marhoon¹, R. Bayoumi², Y. Al-Farsi³, A. Al-Hinai², S. Al-Maskary², K. Venkiteswaran¹, Q. Al-Busaidi¹, J. Mathew¹, K. Rhman¹, O. Sharif¹, S. Aquil¹, I. Al-Hashmi¹

¹ Urology Division, Department of Surgery, College of Medicine and Health Sciences, Sultan Qaboos University, Muscat, Oman

² Department of Biochemistry, College of Medicine and Health Sciences, Sultan Qaboos University, Muscat, Oman

³ Department of Family Medicine, College of Medicine and Health Sciences, Sultan Qaboos University, Muscat, Oman

Introduction: Urinary stones are a common urologic disease and their composition is unknown in Oman. The aim is to analyze the components of urinary stones of Omani patients and use data obtained for future studies of etiology, treatment and prevention.

Methods: Urinary stones of 223 patients collected from consecutive patients at Sultan Qaboos University Hospital, a referral center-receiving patients from all geographic areas of Oman. Stones analyzed by Fourier transform infrared spectrophotometer (FT-IRS, Perkin Elmer). Patients data and stone data collected include: biochemical, metabolic and radiological investigations.

Results: For the 223 patients the mean \pm SE age was 41.67 ± 1.0 years, with M:F ratio 3.4:1. Stones mostly occurred in age group of 30-40 years. The common comorbidity associated with stone formation was diabetes and hypertension (23%). The common presentation was renal colic (44%). Stones surgically retrieved in 66% from kidneys (36.6%), ureters (45%) and bladder (9.7%). Mean stone size was 8.6 ± 0.5 mm. Stone formers had a BMI ≥ 25 in 48.8% ($P = 0.006$) and positive family history of stones in 3.5%. The most common stones in Oman were: Calcium Oxalates (CaOx) 41.7% (93/223); Mixed calcium phosphates & calcium oxalates (CaP+CaOx) 23.8% (53/223); Uric Acid (UA) 21% (47/223); and Cystine 4% (9/223) (Table 1). Calcium Oxalates were mainly of the type monohydrate (61%), Calcium Phosphates mainly Apatite (85.7%) and Uric acid stones were mainly pure (72%). Cystine stones occur in patients younger than 30 years (45%), mostly females (56%), associated with chronic kidney disease (33%) and recurrent in 89%.

Conclusion: The most common urinary stones in Oman are Calcium Oxalates. Overweight is an important risk factor associated with stone formation. The hereditary Cystine stones are three times more common in Oman than what is reported in the literature that needs further genetic studies.

Stone Type	No.	%
Calcium Oxalates (CaOx)	93	41.7
Calcium Phosphates (CaP)	7	3.1
Uric Acid (UA)	34	15.2
Cystine	9	4.0
Mixed UA+ Urate	1	0.4
Mixed UA+CaOx	11	4.9
Mixed CaP+CaOx	53	23.8
Mixed Struvite+CaP	3	1.3
CaOx+CaP+UA	1	0.4
Mixed CaOx+ Urate	1	0.4
Struvite (Infection)	2	0.9
Mixed CaP+Urate	1	0.4
Urates	1	0.4
CaOx+CaP+ Urate	6	2.7
Total	223	100

Table 1. Composition of urinary stones for 223 Omani patients