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Influence of BMI on calculogenic biochemical parameters

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The reason for the increasing incidence of stone disease has to be recognized in order to recommend prophylaxis. High BMI is postulated as a cause. This paper is based on the findings of the biochemical assessment of proved stone patients to recognize the metabolic cause related to high BMI to aggravate calculogenic propensity.

394 patients with urinary stone disease were randomly selected for assessing the body mass index and the presence of various metabolic parameters namely 24 hour urine volume, calcium, phosphates, uric acid, oxalate, magnesium, citric acid, sodium and potassium and serum creatinine calcium, phosphorus, and uric acid. The patients were classified based on the BMI values into low (<18.5), moderate (18.5 – 24.5) and high (>24.5). The values of the biochemical parameters were compared between three groups of patients. The statistical significance of the variations was analysed using anovar.

The values of the three groups are detailed in the Table.

Parameters	<18.5		18.5-24.5		>24.5		P
	Mean	SD	Mean	SD	Mean	SD	
VOLUME	2970.97	1144.32	2777.13	1047.78	2937.97	1122.99	NS
CALCIUM	260.77	108.22	227.64	80.49	237.17	78.45	NS
PO	692.45	373.27	691.03	404.54	775.10	392.76	NS
URICACID	430.61	156.45	505.57	181.50	552.61	199.69	<0.001
OXALATE	75.45	31.05	76.34	39.67	79.95	38.46	NS
MAGNESIU	5.91	2.19	5.68	2.11	5.96	2.21	NS
CREATINI	1.47	0.70	1.47	0.64	1.49	0.57	NS
CA	317.71	218.49	393.39	265.48	429.84	282.58	NS
NA	317.61	413.16	267.65	196.11	266.37	165.20	NS
K	45.45	31.66	50.48	22.91	54.82	32.92	NS
SCR	0.97	0.30	0.99	0.32	0.95	0.32	NS
SCA	9.71	1.50	9.42	1.46	9.40	1.42	NS
SPH	3.51	1.29	3.36	1.36	3.24	1.14	NS
SUA	5.63	2.03	6.32	2.12	6.40	2.05	NS
SMG	1.95	0.19	1.95	0.21	1.94	0.21	NS

It is observed that urine uric acid is the one parameter which appears to be significantly elevated in the high BMI group. Since this is a very important biochemical parameter in stone formation reduction in BMI and reduction of urine uric acid become important aspects of stone prophylaxis.