

COMPOSITION OF HUMAN RENAL CALCULI OBTAINED FROM PATIENTS IN SOME DISTRICTS OF SRI LANKA

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Urolithiasis is a common problem in the world including Sri Lanka. Information of this disease among gender, age groups, districts, climate zones, people with different food habits and life style is important to control the disease. The composition of calculi reveals underlying causes that help to treat patients and to prevent recurrence. The present study was to establish composition of calculi and relate it among different category of patients.

Seventy-nine renal calculi samples with patients' data were collected from 20 districts of Sri Lanka. Standard chemical methods were used to measure oxalic acid (OA), calcium (Ca), phosphorus (P), uric acid (UA) and magnesium (Mg) quantitatively. Ammonium ion (NH_4^+), carbonate ion (CO_3^{2-}) and cystine were determined qualitatively. Ethical clearance was obtained from the Ethics committee, Postgraduate Institute of Science. The results were categorized by gender, age groups, districts, climate zones (wet, intermediate, dry), and compared among them, using statistical software 'Minitab 16'.

The occurrence of calculi was greater in males (Male : Female = 3.1:1) and at the age of 21-40, 41-60 and 61-80 years, occurrence was 22.8 %, 58.2 % and 19.0 % respectively. The recurrence rate of calculi was 40 %; in men it was 47 % and in women 19 %. The calculi contents were OA (Mean \pm SD, Median; 48.24 ± 11.23 , 51.64 mg %), Ca (15.84 ± 4.23 , 16.97 mg %), P (1.17 ± 2.58 , 0.27 mg %), UA (0.26 ± 0.41 , 0.07 mg %) and Mg (0.27 ± 0.52 , 0.15 mg %). OA was present in 100 % of calculi, Ca was in 96 %, P was in 29 %, UA was in 15%, Mg was in 8 % and NH_4^+ was in 59.5 % of calculi. CO_3^{2-} and cystine were not found in calculi. According to the new classification, oxalate stone constitutes 84.8 %, mixed 11.4 %, phosphate 2.5 % and infection stone 1.3 %. Seventy percent of calculi patients had consumed ≤ 1.5 L water/day and 30 % had consumed > 1.5 L/day. Sixty percent of patients had consumed water from wells including tube wells and remaining had consumed tap water.

Male domination was observed in occurrence and recurrence of calculi. Middle-aged people were at more risk of urolithiasis compared to people at extremes of age. Calcium oxalate was the commonest type of stone and oxalic acid and calcium were major and common components of the calculi. The composition of calculi did not significantly ($p > 0.05$) vary among gender, age groups, districts and climate zones except oxalic acid, which was significantly higher ($p < 0.05$) in men than women.

