

SUGGESTION FOR THE CLASSIFICATION URINARY STONES

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ABSTRACT

Urinary stones are classified in to Category I and II, based on the characterizing ions. Category I stones have the composition of three main anions viz Uric acid/Urate, Oxalate and Phosphate. If the Uric acid/Urate is $\geq 20\%$, the stone is Uric acid/Urate type; Oxalate is $\geq 40\%$, the stone is Oxalate type and Phosphate is $\geq 10\%$ with Uric acid/Urate $< 20\%$ and Oxalate $< 40\%$, the stone is Phosphate type. Category II stones should have, $Mg^{2+} \geq 3\%$ as characterizing ion. If the ionic components of the stones match the above, there is no other accepted classification methods available. In this studies 100 urinary stones were collected from Northern Province patients who underwent surgical intervention at Genitourinary Surgical Unit, Teaching Hospital, Jaffna. Among the stones, 51 were classified Uric acid (21 nos.), Oxalate (13 nos.) Phosphate (12 nos.) and five stones were of Category II. Rest of the 49 stones did not comply with the available method and they were classified based on the ratios between the highest anion (characterizing ion) and the second highest anion (indicating ion) present in the stones. In this method the stones which had Oxalate to Urate ratio between 16:1 to 65:1 were considered as Oxalate stones (41 nos.); Urate to Oxalate ratio from 0.5:1 to 100:1 were considered as Urate type (4 nos.) and Phosphate to Oxalate ratio between 0.5:1 to 25:1 as the Non- infection Phosphate stones (4 nos.). The compositions of selected stones fitted well with the analytical report of Fourier Transform infrared spectroscopy (FTIR) method. This study indicated that wherever the classification of stones is not feasible based on the method in practice, the suggested method could be adopted to classify the urinary stones.

Key words-Urinary stone, Characterizing ions, Indicating ions, Oxalate stone, Urate stones