

## URINARY OSMOLALITY: CREATININE RATIO OF SPOT URINE SAMPLES RELATES TO BODY HYDRATION STATUS

D.M.M.P. DISSANAYAKE<sup>1</sup>, S. GODEVITHANAGE<sup>1</sup>, W.A.T.A. JAYALATH<sup>2</sup>,  
A.D.N. CHANDRASIRI<sup>3</sup>, C.D.A. GOONASEKERA<sup>1</sup>  
AND P.H.R.P. JINASENA<sup>4</sup>

<sup>1</sup>Department of Anesthesiology, <sup>2</sup>Department of Medicine, <sup>4</sup>Department of Obstetrics and Gynaecology, Faculty of Medicine, University of Peradeniya, <sup>3</sup>Veterinary Research Institute, Gannoruwa, Peradeniya,

The objectives of the study were to establish (i) The consistency /inconsistency of early morning spot urine osmolality: creatinine ratio (O: C) in healthy subjects on repeated measurements (ii) the influence of water loading on O: C (iii) the influence of organophosphate (OP) poisoning on O: C.

Healthy volunteers (n=30) adequately hydrated (a), a similar group of subjects (n=21) (b), and 32 OP poisoned patients in the ICU (c) were used for the 3 phases, (i, ii, iii) of this study. Early morning spot urine samples collected on 4 consecutive days from group (a), spot urine samples collected before and hourly intervals up to 3 hours after 1.0 l of water loading (group (b)) and catheter urine samples of ventilated OP poisoned patients (group (c)) were analyzed for osmolality and creatinine concentration.

Group (a) healthy subjects showed a mean O:C ratio of 66.6 mosmol.kg<sup>-1</sup>/mmol.l<sup>-1</sup> (mean osmolality = 534.0 mosmol.kg<sup>-1</sup>, mean creatinine = 9.89 mmol.l<sup>-1</sup>) and this was consistent on the 4 days. Group (b) healthy subjects showed diminishing values for osmolality and creatinine concentration after water loading. However, the O: C ratio increased from the basal value and remained elevated at 3 hours. The mean O: C ratios before and 1, 2, 3 hours after water loading were 72.72, 96.4, 106.4, 85.93 mosmol.kg/mmoll.l<sup>-1</sup>. This increase was significant at 1 and 2 hours after water loading. The 32 OP poisoned patients showed a mean O: C ratio of 110.8 mosmol.kg<sup>-1</sup>/mmol.l<sup>-1</sup> (mean osmolality = 352.30 mosmol.kg<sup>-1</sup>, mean creatinine concentration = 4.11 mmol.l<sup>-1</sup>). Of the OP poisoned group a subgroup of compatible age (20-30 yr) patients (n = 8 ) showed a mean O:C ratio of 100.7 mosmolkg<sup>-1</sup>/mmoll<sup>-1</sup> on the first day of poisoning which was significantly different from the early morning spot urine O:C ratio of normal subjects (66.63) (p = 0.01).

Results indicated that in adequately hydrated healthy subjects, the spot urine sample is adequate in estimating body hydration status. This was reinforced by the water-loading test in which O: C ratio increased with increasing hydration, promptly in 1 hour.