Association between 24-hour Urine Urea Nitrogen and Spot Urine Collection in Hospitalized Patients

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**Background:** Nitrogen balance determination from 24-hour urine collection has been used to monitor protein status, stress level, and efficacy of treatment in patients receiving nutrition support. The urine urea nitrogen to urine creatinine (UUN/UCr) ratio of a spot urine specimen may reflect the average rate of urea excretion for the preceding 24-hour period.

**Objective:** To study correlation between UUN/UCr ratio from spot urine samples and 24-hour urine urea nitrogen (UUN).

**Methods:** Thirty-four patients, admitted in Srinagarind Hospital between April 2016 and November 2016, were enrolled in the study. Spot urine samples were taken from the first void in the morning and before noon, while the last void on the same day of 24-hour urine collection. The correlation between UUN/UCr ratio from spot urine samples and 24-hour UUN was analyzed by regression analysis.

**Results:** From the total 34 patients, the mean of 24-hour UUN was 6.12 g. The mean of UUN/UCr of spot urine samples from the morning, before noon, and the last void were 5.07, 5.53, and 5.03, respectively. Significant correlation between 24-hour UUN and UUN/UCr ratio from spot urine samples was established at all time frames of collection (P<0.01). The UUN/UCr ratio from the samples before noon demonstrated the strongest correlation with 24-hour UUN (R2 = 0.48). The 24-hour UUN might be estimated from the spot urine samples taken before noon by the equation: “24-hr UUN = 0.78(UUN/UCr from spot urine) + 2.6”.

**Conclusion:** The 24-hour urine collection remains a gold standard for nitrogen balance estimation. However, the UUN/UCr ratio of a spot urine sample may be used when a 24-hour sample is unavailable.

**Keywords:** 24-hour urine urea nitrogen, UUN/UCr ratio