

中文題目：尿液濃度對於尿液白蛋白除以肌酸酐之比值的診斷率之影響

英文題目：Effect of Urine Concentration on Diagnostic Accuracy of Urine Albumin/Creatinine Ratio

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Background: Albuminuria is a useful marker to indicate kidney damage, which is essential to stage chronic kidney disease (CKD) accurately. The estimation of daily urine albumin excretion by the urine albumin/creatinine ratio (UACR) from random single-voided urine specimens is convenient and time-saving. Still, relatively little attention has been paid to the effect of concentrated urine or dilute urine on test accuracy.

Methods: We collected 24h urine specimens to examine both UACR and timed (24h) urine albumin excretion, with the latter as the reference standard. Specific gravity from a concomitant urinalysis of the same urine sample was used to indicate the urine concentration. Receiver operating characteristic (ROC) curves were generated to determine the discriminant cut-off values of urine creatinine concentration for predicting an accurate UACR estimation in either concentrated or dilute urine samples. Variables associated with an accurate UACR estimation were determined by multivariable linear regression analysis.

Results: The UACR is more likely to underestimate the actual daily urine albumin excretion for concentrated urine, as indicated by a high urine specific gravity. In contrast, UACR from a dilute urine specimen is more likely to result in an overestimation. We also compared distribution patterns of urine creatinine concentration of 24h urine cohort with a concurrent spot urine cohort and found that the underestimation might be more profound in single voided urine specimens.

Conclusion: The UACR from urine samples with high or low specific gravity is more likely to underestimate or overestimate actual daily urine albumin amount, respectively. Of note, the UACR data should be interpreted with caution in cases that involve dilute urine specimens because its overestimation may lead to an incorrect CKD staging or an erroneous diagnosis of albuminuric renal disease.