Microalbuminuria and hemoglobin risk predictors of eye diseases – Comment

Dear Editor,

Ajoy Mohan *et al*.[1] propose microalbuminuria and hemoglobin (Hb) as strong predictors of severe diabetic eye diseases – an important practical issue for laboratories. The authors have measured microalbumin in an early morning spot urine sample and calculated the albumin excretion for 24 hours. I would like to highlight the following points.

Firstly, the measurement accuracy must be clinically/optimally acceptable for any analyte when used for risk prediction. The authors have chosen the first morning void spot urine to measure albumin, which is the best sample approach.[2] But they calculated the albumin excretion for 24 hours, which is error prone. The preferred method of screening for microalbuminuria is measurement of the urine albumin to creatinine ratio (ACR) in the first morning spot urine.[3,4] ACR reduces the variation from urine volume variability and the inconvenience of an error-prone 24-hour collection. The variation of albumin concentration in urine is more than 40% when it is expressed as mg/L.[5] [This means the true result of 50 mg/L may vary between 20 and 70 mg/L and it is apparent that the probability of misclassification into normal albumin is high (microalbuminuria: 30–300 mg/L)]. This is the rationale of requirement of multiple assays to confirm microalbuminuria, in order to improve the accuracy of the result as recommended by various clinical professional bodies such as the National Kidney Foundation (NKF), the American Diabetes Association (ADA), National Institute of Clinical Excellance (NICE), and others. In case a specific individual is followed over time with serial urine samples, the ACR may offer an advantage over albumin concentration alone.

Secondly, the currently used automated hematology cell counters adopt electrical impedance technique only to count the cells in the whole blood and not to directly measure the Hb concentration. Instead, spectrophotometry/complicated calculation is used to derive Hb concentration from the whole red blood cells. The authors mention "serum Hb" instead of blood Hb in their conclusion, in addition to the statement of non-existent method used for the measurement of Hb, which confuses the readers. Optimally achievable accuracy and consistency are of paramount importance for risk prediction testing. Participation in quality assurance program and accreditation for medical testing program also ensure that Hb and microalbuminuria testing is performed at an accepted standard, since their study results revolve around the urine albumin and blood Hb concentrations. Unfortunately, vital method details are missing in this paper to evaluate the scientific soundness of their study.

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