RIMeL / IJLaM 2009; 5 (Suppl.)

Urinary Albumin Excretion in chronic kidney disease: critical issues in measurement and reporting

M.S. Graziani

Laboratorio di Analisi Chimico Cliniche ed Ematologiche, Ospedale Civile Maggiore, Azienda Ospedaliera di Verona, Italy

Urinary excretion of albumin is a cardinal sign of kidney disease and it is recognized as a risk factor for progression of kidney disease and cardiovascular disease. Because of its clinical importance there is an urgent need for an accurate measurement of the protein and for clearly reported results. The National Kidney Disease Education Program and the IFCC established a Working Group on "Microalbumin" with the aim to identify specific areas for improvement.

At the moment there is a consensus opinion on the following issues:

– the term "microalbumin" is to be discouraged,
– first morning void is the preferable sample since provides a lower variability than other types of samples,
– urinary albumin should not be measured in frozen sample (unless they have been stored at -70 °C),
– an albumin/creatinine ratio (ACR) should be reported with all measurements,
– albumin concentration in milligrams per litre should not be the only value reported.

Many areas require further investigation; among these:

– albumin adsorbs on plastic surfaces, so the influence of the container type on albumin concentrations should be carefully evaluated,
– the nature of albumin in urine is more complex than previously thought, so there is an absolute need of an accurate definition of the measurand,
– development of a reference measurement procedure: primary and secondary materials and reference method,
– development of urine creatinine reference measurement procedure,
– identification of appropriate EQAS materials in order to be able to compare the analytical performances of different methods,
– definition of the reporting units (g albumin/mol creatinine; mg albumin/g creatinine; ug albumin/mg creatinine).

Regarding the post analytical phase and the reporting issues, it should be noted that the existing threshold limits have been established for people with diabetes. If these limits could be used for people without diabetes is still matter of debate. ACR varies with age, sex and ethnicity: the decision limits for these subgroups need further studies and investigations. However, there is increasing evidence that a continuous relationship between urinary albumin excretion and risk of chronic kidney disease or cardiovascular risk exists, so that no lower bound between normal and increased albuminuria can be identified that segregates subjects at different risk. In this view, it will become increasingly important to establish urinary albumin concentrations below which therapy is no longer beneficial. Some epidemiological studies have already demonstrated that the amount of albumin which can be considered "negligible" is much lower than the threshold limits established for diabetic nephropathy. The sensitivity of the laboratory method is, in this context, crucial and should be carefully evaluated when examining the analytical performances of a method.

Ricevuto: 15-07-2009 Pubblicato on-line: 11-09-2009

Corrispondenza a: Dott.ssa Maria Stella Graziani, Laboratorio di Analisi Chimico Cliniche ed Ematologiche, Ospedale Civile Maggiore, Azienda Ospedaliera, Piazzale Stefani n.1, 37126 Verona, Italia. E-mail: mariastella.graziani@azosp.vr.it