# Uric acid may provide early clues to diabetic kidney disease

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For patients with type 1 diabetes, increased levels of uric acid in the blood may be an early sign of diabetic kidney disease—appearing before any significant change in urine albumin level, the standard screening test, reports a study in the May 2008 issue of the *Clinical Journal of the American Society of Nephrology*.

The results raise the possibility that treatments to reduce uric acid might slow the decline of renal function in patients with diabetes. "Thus we have the hope of having a means to thwart the loss of kidney function while function is still in a relatively preserved stage," comments Dr. Elizabeth T. Rosolowsky of Joslin Diabetes Center, Boston.

The researchers measured serum uric acid concentration in 675 patients with type 1 diabetes. On screening tests, 311 patients had small amounts of the protein albumin in the urine. This result—called microalbuminuria—is generally regarded as a harbinger of kidney function loss in diabetic kidney disease (nephropathy). The other 364 patients had normal urine albumin levels.

None of the patients had higher levels of albumin (albuminuria) representing more advanced diabetic nephropathy. Nevertheless, one in five had some impairment of kidney function on a standard test, the glomerular filtration rate. "Our research showed that loss of kidney function takes place even in the absence of albuminuria in patients with type 1 diabetes," says Dr. Rosolowsky.

In contrast, the serum uric acid level was consistently related to kidney function—the higher the uric acid, the lower the kidney function. "The serum concentration of uric acid in these patients varied in a manner consistent with its having played a role in this early loss of kidney function," according to Dr. Rosolowsky.

Urine albumin is commonly measured to identify patients with type 1 diabetes at risk of developing nephropathy. "Historically, it was believed that the start of kidney function loss happened only when the amount of leakage of albumin into the urine had reached a certain level," Dr. Rosolowsky explains. "However, recent studies by our group have suggested that kidney function loss may start much earlier in some patients with type 1 diabetes." Other studies have suggested that increased serum uric acid levels are associated with loss of kidney function, and may even be a causative factor.

If higher uric acid levels do contribute to loss of kidney function, then the findings may offer a new approach to treating diabetic kidney disease. "The serum uric acid concentration is modifiable by drugs or by decreasing the intake of dietary protein, the main source of uric acid," says Dr. Rosolowsky. "If follow-up studies, already underway, demonstrate that serum uric acid concentration predicts the course of early decline in kidney function, then clinical trials would be justified to test whether modifying serum uric acid concentration also modifies the course of renal function decline in type 1 diabetic patients with high normoalbuminuria or microalbuminuria."

Source: American Society of Nephrology