

Title:

**VARIATION IN THE DECLINE OF GFR IN TYPE 2 DIABETIC
PIMA INDIANS WITH ALBUMINURIA**

Author(s):

**KEVIN V. LEMLEY, DEREK B. BOOTHROYD, KRISTINA L.
BLOUCH, ROBERT G. NELSON, LOIS I. JONES, RICHARD A.
OLSHEN, AND BRYAN D. MYERS**

Technical Report number (Dept. of Statistics, Stanford Univ.):

2003-30B/227

Date:

October 2003

Abstract:

Background. The course of type 2 diabetic nephropathy often includes many years of hyperfiltration followed by a relatively rapid progression to end-stage kidney failure. It is not clear how much variation exists in the rate of progression within a single genetically similar population.

Methods. In an 8-year longitudinal study of Pima Indians with type 2 diabetes and nephropathy, we compared GFR in individuals enrolled with new-onset microalbuminuria who progressed to macroalbuminuria during follow-up ($n = 13$), microalbuminuric subjects who did not progress ($n = 13$), and subjects with new-onset macroalbuminuria at screening ($n = 22$). Patients had urine albumin/creatinine ratio determined every 3-6 months and GFR determined serially by urinary iothalamate clearances. GFR courses were modeled using an adaptation of smoothing and regression cubic B-splines.

Results. GFR profiles of progressors differed significantly from those of non-progressors ($P = 0.003$); average GFR slopes were -9.3 mL/min/y and -4.9 mL/min/y, respectively. There were no significant baseline differences between progressors and non-progressors with respect to any measured clinical parameters. The course of GFR following progression to macroalbuminuria in initially microalbuminuric subjects also differed from that in new-onset macroalbuminuric subjects. The slope in the latter was -16.9 mL/min/y versus -10.5 mL/min/y in the former.

Conclusions. Type 2 diabetic Pima Indians manifest different rates of decline in their GFR depending on their level of albuminuria at screening and its subsequent evolution. These findings suggest that the course of decline of GFR in diabetic Pima Indians, although generally progressive, follows distinct trajectories in definable subgroups.