# Clinical and Histopathologic Characteristics Associated with Renal Outcomes in Lupus Nephritis

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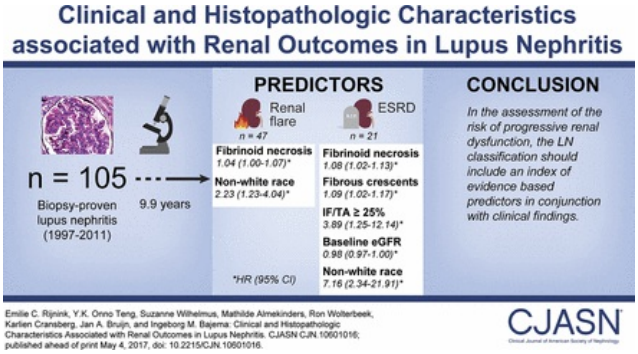
## Visual Overview




## Abstract

**Background and objectives** The prognostic significance of histopathologic (sub)classes in the current classification of lupus nephritis (LN) is controversial. We analyzed clinical and histopathologic predictors of renal outcome in LN outside the framework of the classification.

**Design, setting, participants, & measurements** Variables (50 histopathologic and ten clinical) were tested in mixed, linear, and Cox regression models for their association with renal flare, ESRD, and eGFR during follow-up (1, 5, and 10 years) in 105 patients with LN who underwent biopsy from 1987 to 2011. The Cockcroft-Gault (normalized to a body surface area of 1.73 $m^2$) and Schwartz formulas were used to calculate eGFR for adults and children, respectively.

**Results** During median follow-up of 9.9 years (25th-75th percentile, 5.9-13.8), 47 patients experienced a renal flare and 21 progressed to ESRD. Renal flare was predicted by fibrinoid necrosis (hazard ratio [HR], 1.04 per %; 95% confidence interval [95% CI], 1.00 to 1.07) and nonwhite race (HR, 2.23; 95% CI, 1.23 to 4.04). ESRD was predicted by fibrinoid necrosis (HR, 1.08 per %; 95% CI, 1.02 to 1.13), fibrous crescents (HR, 1.09 per %; 95% CI, 1.02 to 1.17), interstitial fibrosis/tubular atrophy (IF/TA) ≥25% (HR, 3.89; 95% CI, 1.25 to 12.14), eGFR at baseline (HR, 0.98 per ml/min per 1.73 $m^2$; 95% CI, 0.97 to 1.00), and nonwhite race (HR, 7.16; 95% CI, 2.34 to 21.91). A higher mean eGFR during follow-up was associated with normal glomeruli (+0.2 ml/min per 1.73 $m^2$ per %; 95% CI, 0.1 to 0.4). Like ESRD, a lower eGFR during follow-up was associated with fibrous crescents, IF/TA≥25%, and nonwhite race, as well as with cellular/fibrocellular crescents (−0.4 ml/min per 1.73 $m^2$ per %; 95% CI, −0.6 to −0.2) and age (−0.8 ml/min per 1.73 $m^2$ per year; 95% CI, −1.2 to −0.4).

« Previous | Next Article »
Table of Contents

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**Conclusion** The LN classification should include an index of evidence-based prognosticators. Awaiting validation of a formal index, we suggest that at least fibrinoid necrosis, fibrous crescents, and IF/TA warrant explicit independent scoring to assess the risk of progressive renal dysfunction in conjunction with clinical findings.

classification;

clinical pathology | evidence-based medicine | prognosis | atrophy | fibrosis | follow-up studies | glomerular filtration rate | humans | kidney | kidney failure, chronic | kidney glomerulus | lupus nephritis | renal insufficiency, chronic

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