Purpose: Anabolic androgenic steroids (AAS) have multiple adverse effects, however renal injury has not been described previously. We report a novel association of FSGS in bodybuilders who abuse AAS.

Methods: Ten patients (6 Caucasian, 4 Hispanic) were identified from the archives of the Columbia University Medical Center and Massachusetts General Hospital between 1999 and 2009 with: 1) highly muscular physique and bodybuilding; 2) longterm AAS abuse; 3) proteinuria (≥1g/d) and 4) renal biopsy diagnosis of FSGS and/or glomerulomegaly.

Results: Average BMI was 34.7 kg/m² (range 27-43). Presentations included proteinuria (mean 10.1 g/day, range 1.3-26.3 g/day) and renal insufficiency (mean serum creatinine 3.0 mg/dl, range 1.3-7.8 mg/dl). Five of 10 patients presented with full nephrotic syndrome. Renal biopsy revealed FSGS in 9 patients, of which 4 also had glomerulomegaly, and glomerulomegaly alone in 1 patient. Three biopsies had collapsing lesions of FSGS, 4 had perihilar lesions and 7 showed >40% tubular atrophy and interstitial fibrosis. Follow-up (mean 2.2 yrs) was available in 8 patients. One patient progressed rapidly to ESRD. The other 7 received RAS blockade, and 1 also received corticosteroid therapy. All 7 discontinued AAS and reduced exercise, leading to weight loss, stabilization or improvement in serum creatinine and decrease in proteinuria. In 1 patient, restarting AAS led to progressive proteinuria and renal insufficiency. When compared to historical controls with obesity related glomerulopathy, FSGS in bodybuilders is a more severe disease with higher creatinine and proteinuria at presentation and more glomerular and tubulointerstitial scarring.

Conclusion: We hypothesize that FSGS results from a combination of post-adaptive glomerular changes driven by increased lean body mass and potential direct nephrotoxic effects of AAS.