COMMENT ON KELLY ET AL.

Subclinical First Trimester Renal Abnormalities Are Associated With Preeclampsia in Normoalbuminuric Women With Type 1 Diabetes. Diabetes Care 2018;41:120–127

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We were interested by the article from Kelly et al. (1), who reported that markers of subclinical renal damage predicted later preeclampsia (PE) in pregnant women with type 1 diabetes mellitus (T1DM). Although the best predictor was neutrophil gelatinase-associated lipocalin, our interest focused on the higher estimated glomerular filtration rates (determined by the Chronic Kidney Disease Epidemiology Collaboration [CKD-EPI] equation) before preeclampsia. Hyperfiltration is considered an important early step of diabetic nephropathy, but it should be noted that glomerular filtration rates are not properly predicted in pregnancy, by any formula, including the CKD-EPI (2).

Much more common than T1DM, gestational diabetes mellitus (GDM) also predisposes to pregnancy-induced hypertension and PE, and subclinical renal abnormalities such as elevated albumin excretion rates have been reported in such cases; however we do not know whether serum creatinine may be abnormal before PE in GDM. It is also unknown whether the accumulation of advanced glycation end products during a hyperglycemic pregnancy may play a role in PE, as suggested by the report of high skin autofluorescence (SAF) in women after PE (3).

In 97 pregnant women with GDM who consented to participate, we collected serum creatinine at 25 ± 7 weeks of amenorrhea and measured the forearm skin autofluorescence using an AGE Reader (Diagnoptics, Groningen, the Netherlands). Seven women had subsequent PE, and they delivered smaller babies (mean ± SD birth weight 2,666 ± 252 vs. 3,180 ± 525 g; $P < 0.05$) 2 weeks earlier than the others ($P < 0.001$). The ages, preconceptional BMI, and HbA_{1c} did not significantly differ between groups; neither did their arterial pressure (systolic 125 ± 10 vs. 114 ± 14 mmHg; diastolic 77 ± 4 vs. 72 ± 9 mmHg; both NS) at 25 ± 7 weeks. However, the serum creatinine was higher for women with later PE (54 ± 6 vs. 46 ± 8 μmol/L; $P = 0.012$). The SAF did not differ between women with later PE (1.81 ± 0.42 arbitrary units) and without PE (1.84 ± 0.34 arbitrary units).

These normal SAF denied a predictive value for later PE in GDM. Higher SAF values, measured at the leg, as reported after pregnancy, probably resulted from, rather than predisposed to, PE (3): SAF is known to quickly rise during an acute kidney injury (4). This does not exclude a role for advanced glycation end products in specific tissues in the pathophysiology of PE (5).

The higher serum creatinine in GDM with later PE seems in line with the hypothesis of subtle renal abnormalities predisposing to PE in GDM, as proposed by Kelly et al. (1) in T1DM, but it contrasts with the hyperfiltration that they reported. The estimation of GFR should be done cautiously in pregnant women, but our results suggest that serum creatinine may be a parameter of clinical interest in pregnant women with diabetes prone to PE.

Duality of Interest. No potential conflicts of interest relevant to this article were reported.

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