

Cardiovascular risk factors and complications associated with impaired renal function and albuminuria in insulin-treated type 2 diabetes

K. Doggen¹, A.J.L. Scheen², P. Van Crombrugge³, F. Nobels³, N. Debacker¹,

V. Van Casteren¹, C. Mathieu⁴;

1Scientific Institute of Public Health, Brussels, 2CHU Sart Tilman, Liège,

3O.L.Vrouwziekenhuis, Aalst, 4UZ Gasthuisberg, Leuven, Belgium.

Background and aims: Albuminuria (AU) and reduced estimated GFR (ReGFR) predict cardiovascular (CV) events in type 2 diabetes. In this study, we investigated the association of AU and ReGFR with CV risk factor control, treatment and prevalent complications in longstanding insulin-treated type 2 diabetic patients.

Materials and methods: Cross-sectional study among 5100 insulin-treated (≥ 2 injections/day) type 2 diabetic patients visiting Belgian secondary care diabetes centres in 2009. AU was defined as ≥ 20 $\mu\text{g}/\text{min}$, ≥ 30 $\text{mg}/24$ h, ≥ 30 mg/g creatinine, or ≥ 20 mg/L . ReGFR was defined as $\text{eGFR} < 60$ $\text{mL}/\text{min}/1.73$ m^2 .

Results: At least 80% of patients received antihypertensive drugs and 70% received lipid-lowering drugs (see table). Number of patients treated with antihypertensive drugs increased as AU, ReGFR or both were present. By contrast, lipid-lowering treatment was associated only with ReGFR, and not with AU.

The higher rate of lipid-lowering treatment among ReGFR patients was associated with higher use of fibrates (9.3% vs. 6.5% in patients without ReGFR).

AU patients, with or without ReGFR, had higher systolic and diastolic blood pressure, and higher total and LDL cholesterol (LDL-C) than patients with ReGFR alone or with neither AU nor ReGFR while HDL-C and triglycerides (TG) were increasingly worse in patients with AU alone, ReGFR alone and

patients with both. HbA1c was significantly increased in AU patients without ReGFR. ReGFR patients, with or without AU, were older and had longer diabetes duration than patients with AU only and patients with neither AU nor ReGFR. Both AU and ReGFR were associated with higher prevalence of retinopathy and a history of macrovascular disease (including coronary heart disease, peripheral artery disease and stroke). However, “isolated” AU and ReGFR were associated with similar prevalence of macrovascular disease.

Conclusion: CV risk factor control, treatment and complications were quite different among type 2 diabetic patients with either AU, ReGFR or both. Of note, ReGFR patients without AU had a high burden of macrovascular disease, despite high treatment rates and moderately good risk factor control.