Three new genetic risk factors for kidney disease in type 2 diabetes

Three genetic variables are identified as predictors of chronic kidney disease (CKD) in Chinese patients with type 2 diabetes, according to a study in Kidney International.

The study used a new three-stage procedure to test the hypothesis that genetic variants associated with type 2 diabetes, obesity, and fasting plasma glucose might be associated with type 2 diabetes-related CKD. This process was carried out using a large clinicogenomic dataset from a prospective cohort of 2755 patients with type 2 diabetes from the Hong Kong Diabetes Registry.

The model included 25 clinical variables and 36 genetic variants associated with type 2 diabetes, obesity, or fasting plasma glucose. Clinical, genetic, and clinicogenomic models were compared, and the effect of the top selected genetic variants on the clinicogenomic model was assessed. The selected genetic variants were subsequently validated in two independent cohorts.

Of the top six single-nucleotide polymorphisms selected from the clinicogenomic data, three were associated with significant improvement in prediction performance. These were the rs478333 variant of the gene G6PC2 and the rs7754840 and rs7756992 variants of CDKAL1. Patients with the rs478333 variant had a faster decline in eGFR—greater than 4 percent per year. On meta-analysis in replication cohorts, the as-
Adding insulin to metformin increases hypoglycemia risk

For diabetic patients on metformin who require treatment intensification, adding insulin rather than sulfonylurea is associated with an increased risk of hypoglycemia, reports a study in the Canadian Medical Association Journal.

Using the Veterans Health Administration database, the researchers identified 178,341 patients who initiated metformin treatment between 2001 and 2008. Treatment was subsequently intensified using insulin in 2948 patients and sulfonylurea in 59,990 patients. Risk of a first or recurrent hypoglycemia event was compared in propensity score-matched groups: 2436 patients taking metformin plus insulin versus 12,180 patients taking metformin plus sulfonylurea.

At the time of treatment intensification, patients had been taking metformin for a median of 14 months and had a median glycated hemoglobin level of 8.1 percent. The follow-up data included 121 first hypoglycemic events among patients who added insulin and 466 first hypoglycemic events among patients who added sulfonylurea. Outcome rates were 30.9 versus 24.6 events per 1000 person-years, respectively—adjusted hazard ratio was 1.30 with insulin compared with sulfonylurea.

Insulin intensification was also associated with a higher rate of recurrent hypoglycemia: 39.1 versus 30.0 per 1000 person-years (hazard ratio of 1.39). Accounting for competing risk of death, the hazard ratio for initial hypoglycemia in the insulin group was 1.28 [Roumie CL, et al. Risk of hypoglycemia following intensification of metformin treatment with insulin versus sulfonylurea. CMAJ 2016; doi:10.1503/cmaj.150904].