00534   Improve the Identification of Patients at Risk of Diabetic Nephropathy Using Retinal Vascular Abnormalities

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Aims: The objective of this study was to determine the predictive value of retinal vascular abnormalities (RVA) in identifying patients at risk of developing diabetic nephropathy (DN) in adults with diabetes.

Methodology: This study was conducted in a population-based cohort of 1365 Chinese, Malay and Indian adults with diabetes. RVA - signs of DR, retinal arteriolar and venular diameter – were assessed at the baseline visit using IVAN software. Incident cases of DN were identified 6 years later at the follow-up visit based on onset of DN defined as an $eGFR<60mL/min/1.73m^2$ accompanied by ≥25% decrease in eGFR from the baseline. Multivariable logistic regression was used to estimate the relationship between RVA and the risk of DN, and the predictive value of RVA to identify patients at risk of DN beyond traditional risk factors.

Result: The incidence of DN was 14.8%. The effect of changes in vessels diameters on the risk of DN was highly influenced by the DR status. In participants without and with DR, a wider (diameter > mean value) arteriolar diameter (OR=1.65 [1.00, 2.72]) and wider venular diameter (OR=2.95 [1.63, 5.31]) were associated with increased risk of DN, respectively. Add RVA in the model, with interaction terms between DR and both vessels diameter, led to an improvement of the area under the ROC curve (0.84 versus 0.83, p=0.02) and an integrated discrimination index (IDI) equal to 0.02 [0.01, 0.03], p=0.002. In the population of participants with more advanced stages of vessels damages, i.e. DR signs and wider venular diameter (n=159), the IDI reached 0.07 [0.03, 0.09], p<0.001.

Conclusion: These results suggest that (1) RVA reflect early subclinical renal microvasculature abnormalities involved in the development of DN, and that (2) advanced stages of RVA could be used to help identifying patients with diabetes at risk of DN.