Diabetes, Metabolic Syndrome and Obesity

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RESPONSE TO LETTER

Diabetic Retinopathy and Cardiovascular Disease: A Literature Review [Response to Letter]

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Dear editor

Firstly, we appreciate Yuan fang et al for their comments and suggestions on the review entitled "Diabetic Retinopathy and Cardiovascular Disease: A Literature Review"[1] which was published in the journal *Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy*.

In this review, we suggest that DR is associated with the development of CVD and that the severity of DR can be used to predict the development of CVD. Therefore, it is possible to prevent and treat subclinical cardiovascular diseases through early detection of DR.

DR is a common microvascular complication of diabetes. Studies have shown that microvascular dysfunction occurs before the diagnosis of T2DM and leads to the development of diabetic microvascular complications. The presence of microvascular disease may increase the risk of cardiovascular disease morbidity and mortality in patients with T2DM.[2,3]

Dr Fang suspects that the relationship between DR and CVD needs further study. Unfortunately, we did not find a specific study on the relationship between diabetic retinopathy and cardiovascular disease, but several clinical studies have shown that DR is closely related to the occurrence of cardiovascular disease. In a population-based cohort study, patients with severe DR were more likely to develop subclinical systemic vascular disease than those without DR, especially in the coronary circulation.[4] A prospective case-control study showed that DR is a strong and independent risk factor for identifying diabetic subjects with subclinical CVD, and there is a clear relationship between the presence and degree of DR and coronary artery stenosis.[5] In addition, studies have shown that DR is significantly associated with the increased risk of CVD such as myocardial infarction and congestive heart failure, as well as death. And the more severe the degree of diabetic retinopathy, the higher the risk of developing these outcomes.[6] In patients with chronic kidney disease, progression of DR is also associated with the occurrence of CVD, and retinal vasculopathy may be an indicator of macrovascular disease, even after adjusting for risk factors for kidney disease and CVD.[7]

In the initial stage of diabetic retinopathy, endothelial dysfunction plays an important role and in the advanced stage, ischemia leads to angiogenesis, which is similar to the formation of plaques and intraplaque neovascularization, and Intraplaque hemorrhage caused by this process accelerates vulnerable plaque rupture and cardiovascular disease occurrence through an important mechanism.[5] However, there is currently no clear explanation for these associations between DR and CVD, and further research is needed to confirm them.

Taken together, we believe that the severity of DR is associated with CVD, and that early identification and treatment of patients with DR is important to reduce the risk of death in patients with diabetes. We also agree that the association between diabetic retinopathy and cardiovascular disease deserves further study.

Finally, thank you again to Dr Fang et al for their comments and suggestions, which gave us the opportunity to refine this article again.

Disclosure

The author reports no conflicts of interest in this communication.

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