28th European Diabetes Congress

July 17-18, 2019 | Edinburgh, Scotland

MicroRNA-200b expression in vitreous humor of patients with proliferative diabetic retinopathy

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Background & Aim: Proliferative diabetic retinopathy (PDR) is one of the leading causes of blindness. The role of microRNA- 200b (miRNA-200b) in the pathogenesis of PDR has been suggested in diabetic animal models. The aim of this study was to assess miRNA-200b expression level for the first time in the vitreous of patients with PDR and to study its relation to vascular endothelial growth factor (VEGF) as one of the pathogenic mechanisms in PDR.

Methods: Quantitative reverse transcription polymerase chain reaction (qRT-PCR) was used to measure miRNA-200b expression in the vitreous samples obtained from 29 eyes with PDR and from 30 eyes with idiopathic macular hole, as a control group. In addition, enzyme linked immunosorbent assay was used to measure VEGF in these vitreous samples.

Results: MicroRNA-200b expression was increased by about 5-folds in the vitreous samples from eyes with PDR compared with the controls (P=<0.001). Logistic regression analysis revealed for the first time that vitreous miRNA-200b was an independent risk factor for the development of PDR. VEGF level in the vitreous was significantly higher than controls (P=<0.001), but no significant correlation was found between miRNA-200b and VEGF.

Conclusion: MiRNA-200b and VEGF were significantly increased in the vitreous of eyes with PDR but in a non-correlated pattern. Overexpressed miRNA-200b independently increased the risk of PDR occurrence. Further studies are needed to identify the miRNA-200b targeted genes involved in the pathogenesis of PDR and examine the potential role of miRNA-200b as a target for PDR treatment.