Diagnostic and Prognostic Role of Serum miR-20b, miR-17-3p, HOTAIR, and MALAT1 in Diabetic Retinopathy.

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Abstract

Noncoding RNAs are emerging biomarkers for many diseases including diabetic retinopathy (DR). This study aimed to measure the expression levels of serum miR-20b, miR-17-3p, HOTAIR, and MALAT1 in DR patients. A total of 80 patients diagnosed as type 2 diabetes (T2D) and 81 healthy subjects were recruited in this study. T2D patients were divided into three groups: nondiabetic retinopathy (NDR) group (30 patients), nonproliferative diabetic retinopathy (NPDR) group (30 patients), and proliferative diabetic retinopathy (PDR) group (20 patients). Quantitative real-time polymerase chain reaction (PCR) was used to assess the expression of serum miR-20b, miR-17-3p, HOTAIR, and MALAT1. We found a significant decrease in serum miR-20b and a significant increase in serum HOTAIR and MALAT1 in NDR patients compared to healthy subjects. Also, we revealed a significant decrease in serum miR20b and miR-17-3p and a significant increase in serum HOTAIR and MALAT1 in each of NPDR and PDR groups when compared with healthy subjects. Furthermore, we reported a significant decrease in miR-20b and miR-17-3p and a significant increase in HOTAIR and MALAT1in DR as wellas in PDR patients when compared with NDR patients. However, on comparing NPDR with NDR patients, no significant difference was observed regarding the expression levels of miR-20b and miR-17-3p, in contrast, significant elevation of serum HOTAIR and MALAT1 was found in NPDR. Moreover, we observed a significant

decrease in serum miR-20b and miR-17-3p and a significant increase in serum HOTAIR and MALAT1 in PDR group relative to NPDR group. Receiver operating characteristic (ROC) curve was used for evaluating the diagnostic value of the examined serum noncoding RNAs as novel biochemical indicators detecting severity of DR. Our analyses suggested that the examined serum noncoding RNAs may discriminate DR (PDR and NPDR) from NDR. Furthermore, these noncoding RNAs (less importantly miR-17) can be used as promising novel biomarkers for prediction DR severity, distinguishing PDR from NPDR patients. We can conclude that serum miR-20b, miR-17-3p, HOTAIR, and MALAT1 may be used as noninvasive biomarkers for screening of DR and early diagnosis of PDR.