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Th1/Th2 cytokine expression in diabetic retinopathy

Y.L. Cao[1], F.Q. Zhang[2] and F.Q. Hao[1]

[1]Department of Ophthalmology, Weifang Medical University, Weifang, Shandong Province, China
[2]Department of Medical Ultrasonics, Affiliated Hospital of Weifang Medical University, Weifang, Shandong Province, China

Corresponding author: F.Q. Zhang
E-mail: fangqin269@126.com

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ABSTRACT. Diabetic retinopathy (DR), an important complication of diabetes mellitus (DM), is not well understood. T helper cell balance (Th1/Th2) is involved in various autoimmune diseases; however, its role in DR is not understood. This study explores changes in Th1 and Th2 cytokine expression during DR. Blood samples were collected from 25 healthy volunteers (normal control group), 35 patients with type 2 DM (T2DM group) without DR, and 30 cases of T2DM patients with DR (DR group). Real-time PCR was used to measure mRNA expression of *IL-2* and *TNF-α*, secreted from Th1 cells, and of *IL-4* and *IL-10*, secreted from Th2 cells. We used ELISA to detect cytokine expression in serum to analyze the correlation between Th1 and Th2 cytokines. *IL-2* and *TNF-α* mRNA and protein expression

levels in the T2DM and DR groups were significantly higher than in the normal control group ($P < 0.05$). Compared with the T2DM group, the DR group had higher *IL-2* and *TNF-α* levels ($P < 0.05$). *IL-4* and *IL-10* levels were lower in the DR group compared with the normal and T2DM groups ($P < 0.05$), while T2DM showed no difference compared with the normal control ($P > 0.05$). *IL-2* and *TNF-α* were negatively correlated with *IL-4* and *IL-10* in the DR group, respectively. We found that Th1 cytokine secretion was higher and Th2 cytokines secretion was lower during DR, leading to a Th1/Th2 imbalance, suggesting that Th1/Th2 imbalance is a side effect for DR occurrence and development.

Key words: Diabetic retinopathy; Th1; Th2