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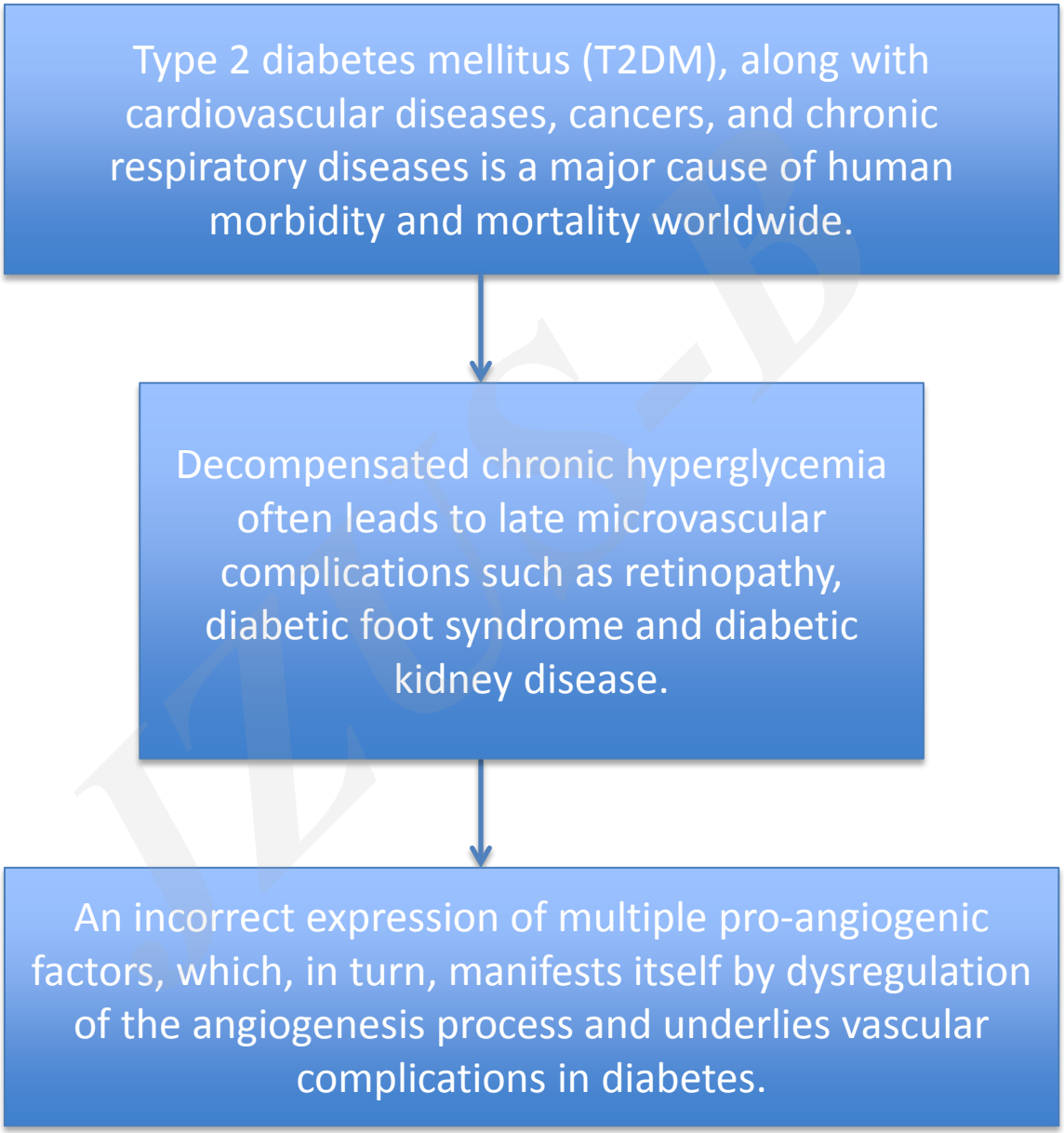
A preliminary evaluation of VEGF-A, VEGFR1 and VEGFR2 in patients with well-controlled type 2 diabetes mellitus

Key words: Diabetes type 2, Angiogenesis, Lipid abnormalities, Glycated hemoglobin

Introduction



Methods

With that in mind, the aim of this study was to determine the concentrations of VEGF-A and receptors 1 and 2 in patients with well-controlled type 2 diabetes mellitus without micro- and macroangiopathy.

The study included 31 patients diagnosed with T2DM (F/M 13/18, average ages 64 years. The control group consisted 30 healthy individuals (F/M 19/11), average ages 50 years.

To qualify for the study, patients had to satisfy the following criteria: a level of HbA1C of ≤6.5% and no vascular complications, assessed by determining the concentration of albumin in the urine, an eye examination, as well as no symptoms of ischaemic heart disease, no symptoms of lower limb ischemia (calculated the ankle-brachial index) and no diabetic foot syndrome.

Concentration of VEGF-A, VEGFR1 and VEGFR2 was determined in serum and it was performed by Enzyme Linked Immunosorbent Assay (ELISA).

Results and Conclusions

The study shows no significant differences in the concentrations of VEGF-A, VEGFR1 and VEGFR2 between the groups. Moreover in the group of patients with well-controlled diabetes there was a significant positive correlation between the concentrations of triglycerides and VEGF-A and VEGFR2. There was also a significant negative correlation between the HDL-cholesterol and VEGFR2 concentrations.

The concentration of VEGF-A and its receptors 1 and 2 in patients with well-controlled diabetes was comparable to that in healthy individuals. This may suggest that proper controlled blood glucose levels reduce or delay the occurrence of vascular complications. The existence of a negative correlation between the levels of VEGFR2 and HDL-cholesterol, and the positive correlations between the concentrations of VEGF-A, VEGFR2 and triglyceride, seem to suggest that lipid abnormalities occurring in diabetes may be involved in the modulation of angiogenesis.