Beclin1 Circulating Level as Predictor of Carotid Intima Media Thickness in Patients with Type 2 Diabetes Mellitus

Mervat Naguib, MDa,b,∗ , Aya Tarabay, MSca,b, Nashwa ElSaraf, MDb , Lila Rashed, MDc , Amr ElMeligy, MDa,b
Faculty of Medicine, Cairo University

Abstract:

Type 2 diabetes (T2DM) represents a major risk factor for atherosclerosis that is the underlying cause of most cardiovascular diseases. Identifying reliable predictive biomarkers are needed to improve the long-term outcome in diabetic patients.

Autophagy plays a pivotal role in the pathogenesis of atherosclerosis. Beclin1 is a key regulatory protein of autophagy and has been localized in human atherosclerotic lesions. However, the relation of serum level of Beclin1 and atherosclerosis in patients with diabetes has not been clarified yet. To assess the relationship between serum level of Beclin1 and carotid intima-media thickness (CIMT) in patients with T2DM. In this case-control study participants were recruited from tertiary care hospitals in Egypt.

The study enrolled 50 patients with T2DM and 25 healthy subjects between January, 2019 and January, 2020. Age, gender, and body mass index were recorded for all subjects. Laboratory works up including glycated hemoglobin, lipid panel, and serum Beclin1 (by enzyme-linked immunosorbent assay) were measured. CIMT was assessed by color Doppler. Comparisons between patients and the control group were done using analysis of variance and Chi-square test.

Correlations between CIMT and Beclin1 level and different variables were done using the Pearson correlation coefficient. Receiver operator characteristic curve was constructed with the area under curve analysis performed to detect the best cutoff value of Beclin1 for detection of CIMT>0.05 cm. The level of Beclin1

in the patient group was significantly lower compared with that in the control group (1.28±0.51 vs 5.24±1.22 ng/dL, P2.2 ng/dL was an accurate predictor of CIMT >0.05 cm with an area under the curve value of 0.997, 93.9% sensitivity, and 100% specificity. Beclin1 levels were negatively correlated with atherosclerotic load in patients with T2DM and it may be considered as a promising diagnostic and therapeutic target.

Abbreviations:

CIMT = carotid intima-media thickness, HbA1C = glycated hemoglobin, HDL = high-density lipoprotein, LDL = low-density lipoprotein, ROC = receiver operator characteristic, T2DM = type 2 diabetes, TC = total cholesterol, TG = triglycerides

Keywords:

Autophagy, Beclin-1, carotid intima-media thickness, diabetes.