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YKL-40 and high sensitivity C-reactive protein inserum in Type 2 diabetic patients in relation to cardiovascular complications

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Objective: YKL-40 may be of pathogenic importance in the low-grade inflammation that precedes the development of cardiovascular disease in Type 2 DM. Diabetes mellitus (DM) is a powerful and independent risk factor for cardiovascular disease. YKL-40 is a marker of inflammation and endothelial dysfunction. It is closely related to both the early and late phases in the development of atherosclerosis.

Aim: The study serum YKL-40 in Type 2 diabetic patients in relation to cardiovascular complications.

Subjects and Methods: 80 subjects were divided into 3 groups: GROUP 1:16 apparently healthy volunteers, GROUP 2:16 patients suffering from Type 2 DM without clinically evident cardiovascular complications and GROUP 3:48 patients suffering from Type 2 DM with cardiovascular complications. In Group: 3, IHD was found in all patients, stroke in 8.3% and PAD in 4.16%. Subjects with acute or chronic inflammation, autoimmune disease or malignancy were excluded. ECG, CIMT, Fundus examination, Laboratory investigations Complete urine analysis, Urinary albumin, Creatinine and calculation of urinary albumin to creatinine ratio, Fasting and postprandial glucose, Glycated hemoglobin, Creatinine and uric acid, ALT, Total cholesterol, HDL-C, TG and Calculation of LDL-C, eGFR, hsCRP and YKL-40) were done to all subjects.

Results and Conclusion:

- hsCRP levels were significantly elevated in the diabetic group with cardiovascular complications when compared to the diabetic group without cardiovascular complications ($p=0.024$).
- The inflammatory glycoprotein YKL-40 was significantly higher in patients with type 2 diabetes mellitus than controls ($p=0.017$) and cardiovascular complications ($p<0.001$) contributed to its greater elevation.
- YKL-40 was positively correlated with several cardiovascular risk factors such as triglycerides, systolic blood pressure and mean blood pressure in the group of diabetic patients without cardiovascular complications.
- In the group of diabetic patients with cardiovascular complications YKL-40 showed positive correlation with duration of diabetes mellitus and urinary albumin to creatinine ratio denoting that longer duration of inflammation leads to increased YKL-40 levels with subsequent generalized vascular damage reflected by albuminuria.
- By drawing receiver operating characteristic (ROC) curve between diabetic patients without and with cardiovascular complications the AUC for hsCRP was (0.676, $p=0.036$) and for YKL-40 was (0.743, $p=0.004$).
- YKL-40 had a better specificity and positive predictive value than hsCRP in discriminating between diabetic patients without cardiovascular complications from those with cardiovascular complications.

Biography

Hoda EL-Attar has completed her MBBS in 1979, received MS degree in Chemical Pathology during 1987 and MD in Chemical Pathology in 2001. She has been working as an assistant Professor in Chemical Pathology from the year 2006 and now she is working as a Professor in Chemical Pathology since the year 2011 at Alexandria University, Egypt. She is a member of the European Society of Cardiology (ESC): Working Group on Atherosclerosis and Vascular Biology. She has published 27 papers.

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