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Assessment of monocyte chemo-attractant protein-1 (MCP-1) in type 2 diabetic patients with nephropathy

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Background: Diabetic Nephropathy (DN) is an extremely common complication of Diabetes Mellitus (DM) that affects more than 25% of all patients with type 2 DM; thus profoundly contributing to patient morbidity and mortality. Studies in human and experimental DN have shown that kidney macrophage accumulation is associated with the progression of diabetes, the development of renal injury, and the decline in renal function suggesting that it is an inflammatory-mediated disease. Monocyte Chemo-Attractant Protein-1 (MCP-1) is a CC chemokine, which plays an important role in the recruitment of monocytes and macrophages from the bloodstream to inflamed tissue. It has been demonstrated that MCP-1-mediated macrophage accumulation and activation is a critical mechanism in the development of DN.

Aim: The present study aims to evaluate the diagnostic value of urinary MCP-1 as biomarkers for early detection of nephropathy in type 2 diabetic patients.

Subjects & Methods: The current study was performed on sixty type 2 diabetic patients. Those patients were classified into three equal groups according to their Albumin Creatinine Ratio (ACR) including patients with normoalbuminuria (ACR<30 mg/g), patients with microalbuminuria (ACR 30-300 mg/g) and patients with macroalbuminuria (ACR>300 mg/g). Twenty apparently healthy subjects matching the same age and socioeconomic status were taken as a control group. Signed informed consent was obtained from each patient.

Results: The mean urinary level of MCP-1 was significantly higher in all diabetic groups when compared to each other and when compared to control group. A significant positive correlation was found between urinary MCP-1 and urinary ACR, urine micro-albumin and fasting plasma glucose and glycated hemoglobin in all diabetic groups. While a significant negative correlation was found between urinary MCP-1 and eGFR in all diabetic groups. The cut-off level for urinary MCP-1 was 148 g/ml (100% sensitivity and 100% specifity) for discriminating between the diabetic patients with and without nephropathy.

Conclusion: The urinary MCP-1 is directly correlated with the severity of DN, which is an important indicator for the progression of albuminuria and closely linked to renal damage and the degree of glycemic control. Therefore, urinary MCP-1 might be of a diagnostic value as a marker for diagnosis of diabetic nephropathy in patients with type 2 diabetes.

Biography

Doha E Ellakwa obtained her BSc degree in 2000 from Al-Alzhar University in Cairo, Egypt, and her PhD degree in Biochemistry in 2011 from Al-Alzhar University, in Cairo. She has published more than 5 papers in reputed journals. She showed that interleukin 28b as a predictor of sustained virological response in patients with chronic hepatitis C virus infection. She also showed the role of serum osteopontin level as a biomarker in hepatocellular carcinoma. Recently, she greatly contributed to detect the bcl2 polymorphism in patient with hepatocellular carcinoma.

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