

Prevalence and Risk factors of Diabetic nephropathy in Patients with Diabetes mellitus at Diabetes clinic in Benghazi medical center, Benghazi, Libya

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Abstract

Background

Diabetes mellitus (DM) is the leading cause of end stage renal disease worldwide. Microalbuminuria or incipient diabetic nephropathy is one of the initial clinical manifestations of early diabetic nephropathy (DN).

Objective

The aim of the study was to determine the prevalence and risk factors of DN among patients with DM at diabetes clinic in Benghazi medical center (BMC), Benghazi, Libya.

Patients and methods

A total of 585 type 1, type 2 patients with DM were included in this cross-sectional study. The subjects aged ≥ 18 years, they attended the outpatient diabetes clinics at BMC from May 2015 to October 2016, for routine follow-up. Latent autoimmune diabetes in adults (LADA), gestational diabetes, pregnant women and patients with acute infections or heart failure were excluded. Data including, gender, age, type of DM, duration of DM, history of smoking, macrovascular complications, microvascular complications, history of hypertension, weight, height, glycosylated hemoglobin (HbA1c), total cholesterol, triglyceride, LDL, HDL, creatinine and urea were obtained by proforma. Microalbuminuria was assessed using spot urine sample in the early morning, patients were classified according to their urinary albumin concentration (UAC) as having normoalbuminuria (UAC < 30 mg/l), microalbuminuria (UAC =30 to 300 mg/l), or macroalbuminuria (UAC > 300 mg/l). The three groups were compared to analyze the association between albuminuria and its risk factors. In addition, independent predictors of albuminuria were determined using multiple forward stepwise logistic regression and presented as an odds ratio (OR) and 95% confidence interval (CI). Data was analyzed using IBM SPSS 23 statistical program.

Results:

The prevalence of normoalbuminuria was (63.8%), microalbuminuria (30.9%) and macroalbuminuria (5.3%) in the studied group. A statistically significant association found between albuminuria and age ($P < 0.001$), duration of DM ($P < 0.001$), smoking ($P = 0.001$), macrovascular complications ($P < 0.001$), microvascular complications ($P < 0.001$), BMI ($P = 0.046$), poor glycemic control (high HbA1c) ($P < 0.001$), high LDL ($P = 0.037$), high TG ($P < 0.001$), hypertension ($P < 0.001$), uncontrolled BP ($P < 0.001$), family history of DM ($P = 0.027$) and family history of DN ($P < 0.001$). There was clear association between e-GFR and albuminuria. Multiple forward stepwise logistic regression analyses revealed nine independent risk factors influencing albuminuria: duration of DM, smoking, macrovascular complications, microvascular complications, poor glycemic control (high HbA1c), high TG, e-GFR, hypertension, and BP control.

Conclusion

The overall prevalence rate of DN in this study was (36.2%) among the studied patients with DM, and the significant risk factors associated with it included long duration of DM, smoking, macrovascular complications of diabetes, microvascular complications, poor glycemic control (high HbA1c), high triglyceride, estimated GFR, hypertension and blood pressure control. Therefore, regular screening for microalbuminuria is recommended for all patients with diabetes, particularly those with predicting risk factors. As early treatment is critical for reducing cardiovascular risks and slowing the progression to late stages of DN (overt proteinuria and end stage renal disease).

Keywords:

Diabetic nephropathy; Albuminuria; Diabetes mellitus; Prevalence; Risk factors.