ASSOCIATION OF DIABETIC NEPHROPATHY WITH COMPONENTS OF METABOLIC SYNDROME: EXPERIENCE FROM A DEVELOPING COUNTRY

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Introduction and Aims

The prevalence of diabetes mellitus (DM) is increasing throughout the world and mostly contributed by type 2 diabetes mellitus (T2DM). Insulin resistance is important contributory factor for T2DM and metabolic syndrome. DM is the leading cause of chronic kidney disease (CKD). Diabetic nephropathy (DN) is an important cause of morbidity, mortality and healthcare related costs. Obesity, hypertension and other components of the metabolic syndrome are known risk factors for nephropathy and CKD progression. This study was aimed to evaluate the prevalence of DN among patients with T2DM with metabolic syndrome and to evaluate the association of DN with components of metabolic syndrome.

Methods

This cross-sectional study was conducted in BIRDEM General Hospital of Dhaka, Bangladesh, from November 2013 to April 2015. Data were collected purposively and consecutively from 300 patients with T2DM, who were diagnosed as diabetic for at least 3 months. Metabolic syndrome was diagnosed according to the guidelines from the National Heart, Lung and Blood Institute and the American Heart Association. Persistent albuminuria [≥30 mg/day (24 hour collection) or ≥20 µg/min (spot collection)] on at least 2 occasions, 6 to 12 weeks apart was required to diagnose DN. To define obesity, classification of the World Health Organization and International Obesity Task Force was followed. The patients with T2DM with metabolic syndrome (n=237) were divided into two groups depending on presence of DN [Group 1: DM with metabolic syndrome with DN (n=117) and group 2: DM with metabolic syndrome and without DN (n=120)]. Data were compiled and analyzed accordingly.

Results

Total number of participants were 300 and 79% (237 with 2:1 female predominance) had metabolic syndrome of which 117 (117/237, 49.7%) had DN (Group 1). Mean glycated haemoglobin (HbA1c) levels were almost similar in two groups (8.8 ± 1.8% and 8.7 ± 1.8% for Group 1 and Group 2 respectively, p=0.6693).

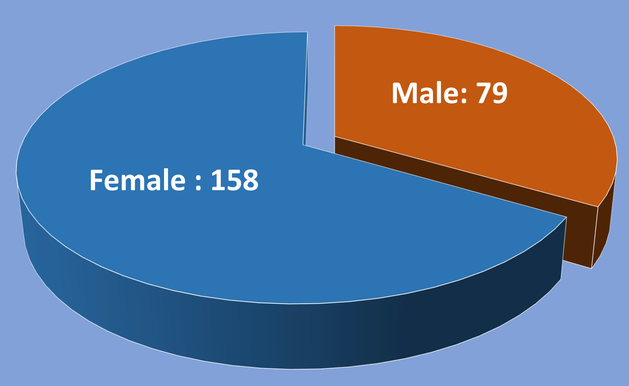

Figure 1: Gender distribution of the patients

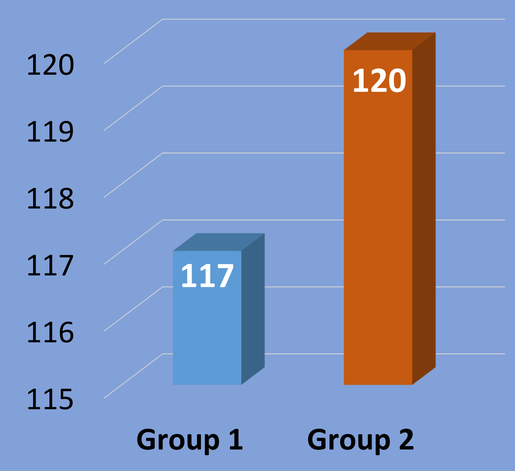

Figure 2: Group distribution

Table I: Association and significance of age of patient and duration of diabetes mellitus with diabetic nephropathy

	Group 1*	Group 2**	Significance (p Value)	Association (λ)
Age (mean ±SD) years	59.3 ± 8.6	51.7 ± 10.8	<0.0001#	0.47##
Duration of DM (mean ±SD) years	16.0 ± 8.4	7.7 ± 6.6	<0.0001#	0.61##

***Group 1:DM with metabolic syndrome and DN, **Group 2: DM with metabolic syndrome without DN, # statistically significant,## strong association**

Table II: Association of DN with components of metabolic syndrome

	Group 1 (117) n (%)	Group 2 (120) n (%)	Significance (p Value)	Association (λ)
Hypertension	117 (100%)	111(92.5%)	0.0025*	0.18#
Obesity	101 (86.3%)	87 (72.5%)	0.0084 *	0.14#
Dyslipidaemia	48 (41%)	54 (45%)	0.64	0.03##
Impaired fasting blood glucose	111 (94.9%)	117 (97.5%)	0.29	0.03##

*** Statistically significant, # moderate association, ## weak association**

Conclusions

Presence of metabolic syndrome and it's components especially hypertension and obesity had significant association with diabetic nephropathy along with the elderly patients and long duration of type 2 diabetes mellitus.

Keyword: Chronic kidney disease, diabetic nephropathy, hypertension

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