Insulin secretory defects and determinants of attending at a tertiary hospital in northern Bangladesh

K Hasnín1, F Jebunnesa2, L Ali2

1Rajshahi Diabetic Center, Rajshahi; 2Department of Biochemistry and Cell Biology, Bangladesh University of Health sciences (BUHS), Dhaka, Bangladesh; E mail: runabi2005@yahoo.com; bcb@bbsu.gmail.com

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Background

• National rationalization and prevention strategies for DM require understanding on the burden.
• Determinants and basic defects of the disorder vary substantially among populations due to racial and environmental factors.
• Bangladesh has one of the largest diabetic populations in the world and its Rajshahi Region has distinct geographical and cultural identity.

Aims

• This study was designed to characterize the new patients attending the Rajshahi Diabetic Center which gives an idea about the proportion and risk indicators of DM among people in the Rajshahi region.
• At the same time the study also aimed to investigate the basic defects of T2 DM in this population.

Methods

Study design

• A hospital based observational analytic study with a hybrid research strategy having both cross-sectional and nested case-control designs.
• A multistage sampling technique was followed with 660 subjects.
• In stage I, for exploring the proportion of T2 DM controls and its association with clinical, socio-demographic and biochemical risk factors.
• In stage II, for a subgroup of subjects and non-diabetic controls, selected through a nested case-control design, were investigated for the basic defect.

Laboratory techniques

• Nutritional intake was assessed by food frequency questionnaire (24 hr dietary recall) method.
• Each subject went through OGTT following appropriate preparation and DM was diagnosed as per WHO Study Group Criteria.

Statistical analysis

• The mean ± SD of continuous variables (Z) was calculated.
• The results were compared using t-test and ANOVA and P < 0.05 was considered as significant.
• The data were evaluated by the chi-square test for categorical variables

Results

Out of the total subjects the AOR of T2D for the first time, were 63% lower for T2 DM.
• The diabetic subjects were mostly (75%) of middle age (20% within 30-49 yrs and 37% >50 yrs), only 2% cases had age <30 yrs and 23% had age >51 yrs.
• There was a male predominance in the proportion of T2 DM (54% female and 70.7% male). The diabetic subjects were mostly (51.9%) of high school class (31.8%) background and by occupation female were mostly housewives (77.7%). Out of the diabetic subjects 37.7% had lower educational levels. (Table 1)

• The mean ± SD of selected parameters of T2DM (Z) of the diabetic subjects was higher than that in non-T2 DM subjects and it came mainly from CHO (38.3%) and its (25.5%). Table 2

• For categorical data chi-square for BMI for Asian population, 47.3% of subjects were normal weight, 36.1% over weight and 16.6% under weight.

Table 2: Frequency distribution of daily dietary intake of total study subjects (n=660).

Table 3: Association of HOMA%B (dependent variable) with other biochemical parameters as explored by multiple regression (Stage II).

Conclusions: It may be concluded that

• Both (HOMA%B) and (IR) constitute the basic defects of diabetes in Rajshahi population, but (HOMA%B) seems to be more important in these patients.
• (HOMA%B) in Rajshahi population is associated with males and level of education and insulin resistance (IR) is associated with males and daily CHO intake.

Acknowledgements

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• Bangladesh Diabetic Society (BADS).

References

Table 7: Association of HOMA%B (dependent variable) with other biochemical parameters as explored by multiple regression (Stage II).

Table 6: Insulinemic status of the total study subjects (n=220).

Table 5: Clinical and biochemical status of the total study subjects (n=660).

Table 4: Total insulinemic status of the T2 DM subjects (n=427).

Table 3: B2 level of male, female, and total study subjects (n=660).

Table 5: Clinical and biochemical status of the total study subjects (n=660).

Table 1: Insulinemic status for serum insulin was measured by Chemiluminescent ELISA using multi auto-analyzer (DPC, USA).

Table 2: Laboratory technique for standardized regression coefficient, DM=Diabetes Mellitus. P=Test of significance value. CI=Confidence Interval. GIR=Glucose insulin ratio; QUICKI=Quantitative insulin sensitivity check index.