

GLYCEMIC STATUS DURING ACUTE CORONARY SYNDROME OF NON-DIABETIC PATIENTS

Dr. Md. Zillur Rahman, Prof. ARM Saifuddin Ekram, Prof. Quazi Tarikul Islam,
Dr. Md. Mahmudur Rahman Siddiqui

Presented by:

Dr. Md. Mahmudur Rahman Siddiqui

MU-III , Department of Medicine,
Dhaka Medical College Hospital, Dhaka.

Introduction:

- **Acute coronary syndrome (ACS)** is an emergency situation requiring immediate diagnosis and treatment. Cardiovascular diseases are the leading cause of death worldwide. About **7.1 million** deaths occurred globally in 1999 due to coronary heart disease and it will rise to **11.1 million** by 2020. The management of ACS is one of the major challenges presently in the field of Cardiology.

- In recent years, much attention has been given to the evidence that the concomitant occurrence of **hyperglycemia** in patients admitted with an **ACS** enhances risk of mortality and morbidity, whether the patients has diabetes or not.
- In some cases, the elevation of glucose could simply be a marker of pre-existing, but not yet detected type-2 diabetes or impaired glucose tolerance (IGT).

OBJECTIVES OF STUDY:

- **General Objective:**

- To estimate glycaemic status during ACS of non-diabetic patients.

- **Specific Objectives:**

- To diagnose the ACS patients by clinical symptoms, ECG and CK-MB level/troponin I.
- To find out the previous diabetic status by **HbA1c**.
- To determine their blood glucose level by **FBS** and **OGT test**.

Hypothesis

Blood glucose level increases during acute coronary syndrome in previously non-diabetic patients.

RESEARCH DESIGN AND METHODS:

- It is an **observational cross sectional study** performed in Rajshahi Medical College Hospital (Jan 2007- Dec 2008).
- A total of **256** ACS patients were included in this study. Among them, **248** subjects (**216** male and **32** female) were selected as non-diabetic by proper history taking, documentary papers and **HbA_{1c}** estimation.

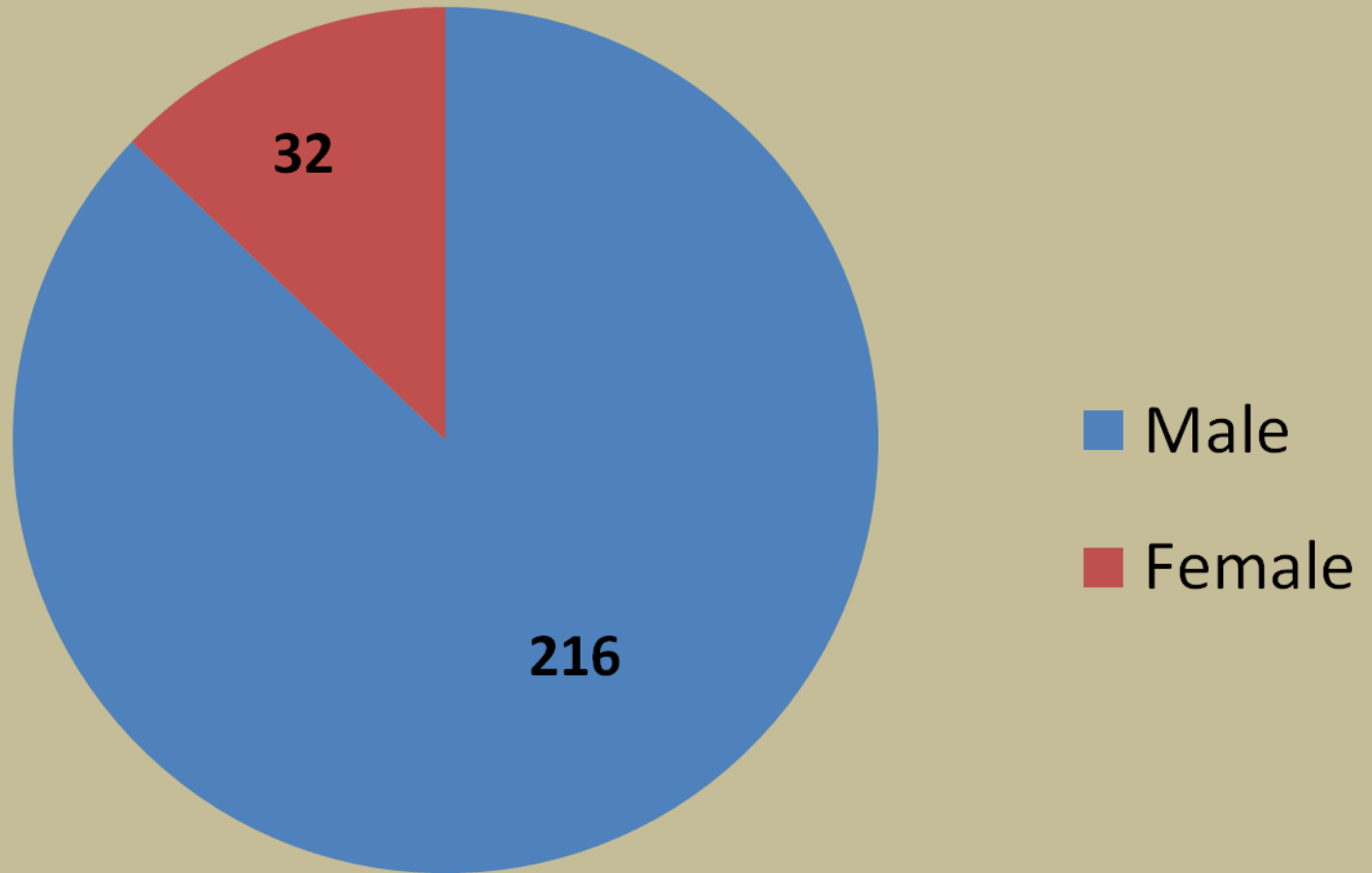
RESEARCH DESIGN AND METHODS-cont.

- Fasting blood glucose and standard oral glucose tolerance test were done within 3 days of ACS.
- Glucose tolerance was categorized normal glucose tolerance (NGT), impaired glucose tolerance (IGT) or impaired fasting glucose (IFG) and diabetes.
- Categorized as undiagnosed diabetes when HbA1c level >7% was found.

Exclusion criteria:

- Severely debilitated patients with intercurrent illness such as thyroid disease, renal failure, heart failure.
- Diabetes mellitus patients excluded.
- Drugs & glucose infusion. (Glucocorticoids, thiazides)
- Patients and his or her attendants deny participate in study.

Sex distribution of total patients



RESULTS

Table 1: Age distribution (n=248)

| Age | No (n) | Percentages(%) |
|--------------|------------|----------------|
| Up to 30 yrs | 9 | 3.63 |
| 31-40 yrs | 40 | 16.13 |
| 41-50 yrs | 85 | 34.27 |
| 51-60 yrs | 62 | 25.00 |
| 61-70 yrs | 43 | 17.34 |
| >70 yrs | 9 | 3.63 |
| Total | 248 | 100% |

Table II: Some bio chemical statistics of the sampled population

| Bio-chemical Statistics | Number | Percent |
|-------------------------|------------|---------------|
| A. FBS | | |
| Normal (>6.1 mmol/l) | 195 | 78.6 |
| IFG (6.1-6.9 mmol/l) | 21 | 8.5 |
| Diabetic (>6.9 mmol/l) | 32 | 12.9 |
| Total | 248 | 100.00 |
| B. OGTT | | |
| Normal (7.8mmol/l) | 113 | 45.6 |
| IGT (7.9-11.1mmol/l) | 76 | 30.6 |
| Diabetic (>11.1mmol/l) | 59 | 23.8 |
| Total | 248 | 100.00 |

Table III: Nutritional status (BMI) wise distribution of Glycaemic condition of the ACS patients.

| BMI | Glycaemic conditions | | | | | | | |
|--------------|----------------------|--------------|-----------|--------------|-----------|--------------|------------|------------|
| | Normal | | IGT | | Diabetic | | Total | |
| | No. | % | No. | % | No. | % | No. | % |
| Normal | 103 | 49.76 | 58 | 28.02 | 46 | 22.22 | 207 | 100 |
| Underweight | 1 | 16.66 | 4 | 66.66 | 1 | 16.66 | 6 | 100 |
| Overweight | 8 | 25.00 | 13 | 40.62 | 11 | 34.37 | 32 | 100 |
| Obese | 1 | 33.33 | 1 | 33.33 | 1 | 33.33 | 3 | 100 |
| Total | 113 | 45.56 | 76 | 30.64 | 59 | 23.79 | 248 | 100 |

Calculated chi-square was done to workout statistical significance.

Calculated value-10.984, Tabulated value-2.167, $p < 0.05$.

So, Glycemic status significantly differ among variable BMI.

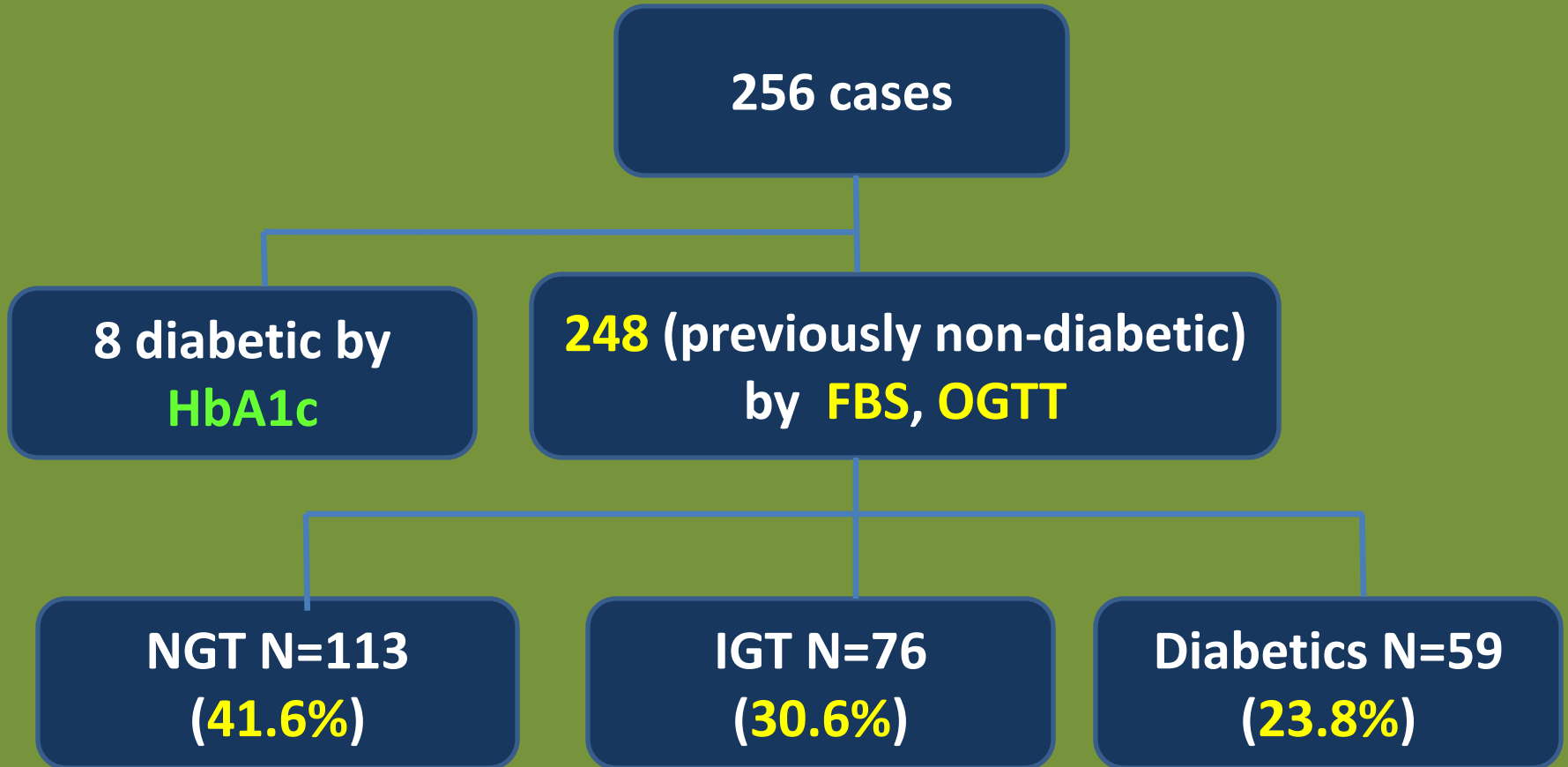
Table IV: Glycaemic status among the smokers

| Glycaemic status | | Smoking habit | | | | Total | |
|------------------|----------|---------------|--------------|------------|--------------|------------|------------|
| OGTT | | Smoker | | Non-smoker | | | |
| | | No. | % | No. | % | No. | % |
| | Normal | 75 | 66.37 | 38 | 33.63 | 113 | 100 |
| | IGT | 59 | 77.63 | 17 | 22.37 | 76 | 100 |
| | Diabetic | 39 | 66.10 | 20 | 33.90 | 59 | 100 |
| | Total | 173 | 69.76 | 75 | 30.24 | 248 | 100 |

Table IV: Glycaemic conditions in the ACS patients.

| Acute coronary syndrome | Glycaemic status | | | | | | | |
|--------------------------------|-------------------------|--------------|------------|--------------|-----------------|--------------|--------------|------------|
| | Normal | | IGT | | Diabetic | | Total | |
| | No. | % | No. | % | No. | % | No. | % |
| Anterior MI | 35 | 41.18 | 26 | 30.59 | 24 | 28.24 | 85 | 100 |
| Antero-septal MI | 23 | 48.94 | 11 | 23.40 | 13 | 27.66 | 47 | 100 |
| Inferior MI | 37 | 43.53 | 31 | 36.47 | 17 | 20.00 | 85 | 100 |
| Sub-endo. MI | 04 | 80.00 | 00 | 00 | 01 | 20.00 | 05 | 100 |
| Unstable angina | 14 | 53.85 | 08 | 30.77 | 04 | 15.38 | 26 | 100 |
| Total | 113 | 45.56 | 76 | 30.65 | 59 | 23.79 | 248 | 100 |

Monogram



Summary

- Out of **248** study population, 135(**54.44%**) had glucose abnormalities. Male was 87.10%. Among male, IGT was 31.94% & diabetic 24.54% which was much more than female.
- Frequency of **Diabetes** was more common between **41-50 yrs** [24.71%(21)] & **IGT** was more common **31-40 yrs** [34.12%(15)] age groups.
- Among smoker glucose abnormalities were **56.64%**.
- Among hypertensive ACS patients glucose abnormalities were **73.91%** including IGT 39.13% & diabetes 34.78%.

CONCLUSION:

Non-diabetic Bangladeshi patients showed a high prevalence of hyperglycemia in ACS. Glucose abnormalities in ACS patients were observed with increased frequency among 41-50 yrs age groups, smokers and hypertensive patients.

We should create awareness about a risk **factor-acute hyperglycemia during acute ACS** & take appropriate & effective measures to reduce morbidity & mortality as a consequence of acute hyperglycemia during ACS with or without diabetes.

Acknowledgement:

- **Dr. Md. Zillur Rahman**, *Dept. of Medicine, RMCH.*
- **Prof. A.R.M. Saifuddin Ekram**, *Professor of Medicine, RMCH.*
- **Dr. Rais Uddin**, *Associate Professor, Head of the dept. of Cardiology, RMCH.*
- **Prof. Quazi Tarikul Islam**, *Professor of Medicine, MU-III, DMCH.*

Thank You