Prevalence of Prediabetes in Young Adults with Family History of Diabetes Mellitus at a Tertiary Health Centre in Uttarakhand

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INTRODUCTION

Diabetes mellitus [DM] refers to a group of common metabolic disorders that share the phenotype of hyperglycemia.¹ It results in various health problems like heart diseases, kidney failure, stroke, blindness and premature deaths.² WHO estimates that diabetes resulted in 1.5 million deaths in 2012, making it the 8th leading cause of death.³ Prediabetes is the precursor stage before diabetes mellitus in which not all of the symptoms required to diagnose diabetes are present, but blood sugar level is abnormally high.⁴ The glucose levels are higher than normal but not enough higher to be called diabetes.⁵ Diabetes is fast becoming the epidemic of the 21st century.⁶ Over the past 30 years, the status of diabetes has changed from being considered as a mild disorder of the elderly to one of the major causes of morbidity and mortality affecting the youth and middle-aged people.⁷ The International Diabetes Federation (IDF) estimates the total number of diabetic subjects to be around 40.9 million in India and this is further set to rise to 69.9 million by the year 2025.⁸ According to the National Urban Diabetes Survey, the prevalence of diabetes and pre-diabetes were 12.1% and 14%, respectively.⁹

Study was done with objectives to find the number of young subjects (18-30 years) with impaired plasma glucose, to estimate the plasma glucose levels by GOD–POD method and screening the subjects for glucosuria.

MATERIAL AND METHODS

The study was conducted from 24-4-2017 to 16-10-2017 at the Himalayan Institute of Medical sciences, at tertiary health care centre in Uttarakhand after getting approval from Institutional Ethical Committee. Fifty Medical students of the institute, within age group of 18-30 years with family history of diabetes mellitus were chosen as subjects from the center. Informed consent was taken from all subjects. Blood samples from these subjects were analyzed for fasting and postprandial plasma glucose levels.

Estimation of Glucose

Glucose was estimated by Glucose oxidase-peroxidase method. Glucose oxidase is an enzyme which catalyze the oxidation of beta D-glucose present in the plasma to D-glucono-l, 5-lactone with the formation of hydrogen peroxide; the lactone is then slowly hydrolysed to D-gluconic acid. The hydrogen peroxide produced is then broken down to oxygen and water by peroxidase enzyme. Oxygen then reacts with an oxygen acceptor such as phenol aminophenazone which oxidizes in a coloured compound, the amount of which can be measured calorimetrically.

Screening of Glucosuria

Glucosuria was screened by semi-quantitative Benedict’s reagent method. When reducing sugars are heated in basic solution, they form powerful reducing compounds known as enediols. Enediol further react with cupric ions (present in Benedict’s solution) into cuprous ions. Cuprous ions get precipitated as brick red precipitate of cuprous oxide. Pre-diabetics was defined according to the ADA recommendation included those with Postprandial glucose between 140 and 199 mg/dL and fasting glucose between 100 and 125 mg/dL.¹⁰

Inclusion Criteria

• Subjects – Between age group of 18-30 years.
• Subjects with family history of diabetes.

Exclusion Criteria

• Known Diabetics.
• Pregnant Females.

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CONCLUSION

Nil prevalence of prediabetes in the study indicates that occurrence of prediabetes is age-related, may be present in advanced adult age, and also a multifactorial process. To find out the prevalence of prediabetes, there should be a large sample size along with different adult age group and other factors such as obesity, hypertension, stress and lifestyle modification.

REFERENCES


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