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Microalbumin, Glycated Hemoglobin and Blood Lipids Levels in Different Duration of Diabetes in Western Maharashtra Region

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ABSTRACT

Background and objectives:

Diabetes Mellitus (DM) is a common condition worldwide. One of the complications is Diabetic Nephropathy which is detected in its early stage by the presence of Microalbuminuria and Glycosylated Hemoglobin (HbA1c).

Methods:

Microalbumin and creatinine were determined on random urine specimens by an Immunoturbidimetric assay and Jaffe's colorimetric method, respectively and HbA1c by Ion exchange resin method, Blood Glucose and Lipids measured by using commercial kits on 50 patients attending the Diabetic outpatients clinic at the P.V.P. General Hospital, Sangli as well as General Hospital, Miraj, Maharashtra.

Results:

Overall, there were 32 (64%) patients with nephropathy. Of these, 28 (87.5%) had microalbuminuria and 04 (12.5%) had macroalbiminuria. In the 18 (36%) patients with diabetes and without proteinuria 11(16.18%). There are 11 (34.37%) patient with Type 1 diabetes without proteinuria. In the 32 patients with Type 2 diabetes 21 (65.25%) had nephropathy, 17 (80.95%) with microalbuminuria and 04 (19.5%) with macroalbuminuria. In all groups over 6% had elevated HbA1c.blood lipids and glucose concentration are altered in patients with DM. We observed a positive and significant correlation between urinary microalbumin and HbA1c levels in patients with DM (r = 0.8528).

Interpretation and conclusion:

These findings suggest that increase in HbA1c, blood lipids and duration of diabetes were increased with increase in severity of microalbuminuria patients with DM may be an indicator of renal tubular damage and dysfunction. This emphasizes the need for proper control of the diabetes.

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Diabetes, a life long progressive disease, is the result of body's inability to produce insulin or use insulin to its full potential, and is characterized by high circulating glucose. This disease has reached epidemic proportions and has become one of the most challenging health problems of the 21st century. It affects more than 230 million people worldwide, and this number is expected to reach 350 million by 2025[12].

The disease cannot be cured but it can be controlled. The chronic hyperglycemia of diabetes is associated with significant long-term sequelae, particularly damage, dysfunction, and failure of various organs especially the kidneys, eyes, nerves, heart, and blood vessels[12]. One of the more chronic complications is diabetic nephropathy (DN) which can lead to end stage renal disease (ESRD). Early detection of nephropathy is important as intense glycaemic control [8].

Microalbuminuria is a strong predictor of development of nephropathy and cardiovascular disease in patients with type 1 and type 2 diabetes [9]. Microalbuminuria, the dominant feature of diabetic nephropathy[13]. Identification and treatment of the risk factors associated with microalbuminuria may be an effective approach to preventing adverse outcome in diabetic patients. Many studies have demonstrated that an older age, poor glycemic control, elevated blood pressure, and dyslipidemia are associated with microalbuminuria in patients with diabetes [15]. This study was planned to determine microalbumin, and Glycosylated Hemoglobin (HbA1c) levels in patients with diabetes mellitus with different duration of diabetes. The information of this marker of kidney among diabetics in Western Maharashtra would allow medical practitioners to better manage their diabetic patients to prevent complications, improve life expectancy, and quality of life.