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ORIGINAL ARTICLE

Assessment of complications in type II diabetes mellitus patients- A clinical study

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***ABSTRACT*:**

Background: Diabetes mellitus is a group of common metabolic disorders that share the phenotype of hyperglycemia. The present study was conducted to assess complications in type II diabetes mellitus patients.

Materials & Methods: This study was conducted on 328 type II DM patients of both genders. A through clinical examination was performed in all subjects. All were subjected to fasting and random blood glucose level. Glycosylated hemoglobin level was also assessed. Complications of diabetes were recorded.

Results: Out of 328 diabetic patients, males were 210 and females were 118. Age group <30 years had 45 males and 18 females, age group 30-45 years had 70 males and 40 females and age>45 years had 95 males and 60 females. The difference was statistical significant (P<0.05). 218 patients were vegetarian, 110 were non- vegetarian, 156 patients were smokers and 148 were alcoholic. 190 patients were obese. The difference was statistical significant (P<0.05). Common complications were hypertension in 215, visual disturbance in 65, neuropathy in 56, foot ulceration in 34, nephropathy in 58, impotency in 14, and diabetic retinopathy in 75. The difference was significant (P<0.05).

Conclusion: Common complications in type II diabetes mellitus patients were hypertension, visual disturbances, neuropathy, foot ulceration, nephropathy, impotency and diabetic retinopathy.

Key words: Diabetes mellitus, diabetic retinopathy, hypertension

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INTRODUCTION

Diabetes mellitus (DM) is a group of common metabolic disorders that share the phenotype of hyperglycemia, which are caused by a complex interaction of genetics and environmental factors. The prevalence of diabetes is rapidly rising all over the world. It has now become the disease of morbidity and mortality affecting the youth and middle aged people.[1] Type 2 diabetes mellitus has higher prevalence rate all over the world which accounts for more than 90 percent of all diabetes cases., but number of type I diabetes mellitus cases is increasing excessively nowadays. The number of diagnosed diabetic patients is 61.3 million so far and hence also known as the diabetic capital of the world.[2]

Diabetic complications associated with hyperglycaemia (HG) impair the metabolism of carbohydrates, fats, proteins and electrolytes, all of which can disrupt the vascular system. Many endothelial capillary cells are damaged under these conditions, including those in the retina, renal glomerulus, and both central and peripheral nerves, due to excessive harmful accumulation of glucose in these cells.[3] The critical mechanisms involved in the development of diabetic complications are mainly induced by chronic HG, impaired lipid catabolism, exaggerated production of reactive oxygen species (ROS) and a reduced antioxidant protective system, that all lead to insulin-resistance and increased damage of beta-cells in the pancreas.[4]

There are various factors such as obesity, genetic factor, excessive intake of food especially sugar and lack of exercise play important role in diabetes mellitus. Modern life style and changed diets with use of refined foods especially sugar and fat had led the increasing incidence of diabetes mellitus.[5] The present study was conducted to assess complications in type II diabetes mellitus patients.

MATERIALS & METHODS

This study was conducted in department of general medicine. In comprised of 328 type II DM patients of both genders. All were informed regarding the study and written consent was obtained. Ethical clearance was taken from institutional ethical committee.

General information such as name, age, sex, diet, smoking, alcoholism, and family history of the disease was taken. A through clinical examination was performed in all subjects. All were subjected to fasting and random blood glucose level. Glycosylated hemoglobin level was also assessed. Complications of diabetes were recorded. Results were tabulated and subjected for statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Gender	Male	Female
Number	210	118

Table I shows that out of 328 diabetic patients, males were 210 and females were 118.

Table II Age wise distribution of patients

Age group	Male	Female	P value
<30 years	45	18	0.02
30-45 years	70	40	0.01
>45 years	95	60	0.05
Total	210	118	

Table II, graph II shows that age group <30 years had 45 males and 18 females, age group 30-45 years had 70 males and 40 females and age>45 years had 95 males and 60 females. The difference was statistical significant (P<0.05).

Graph II Age wise distribution of patients

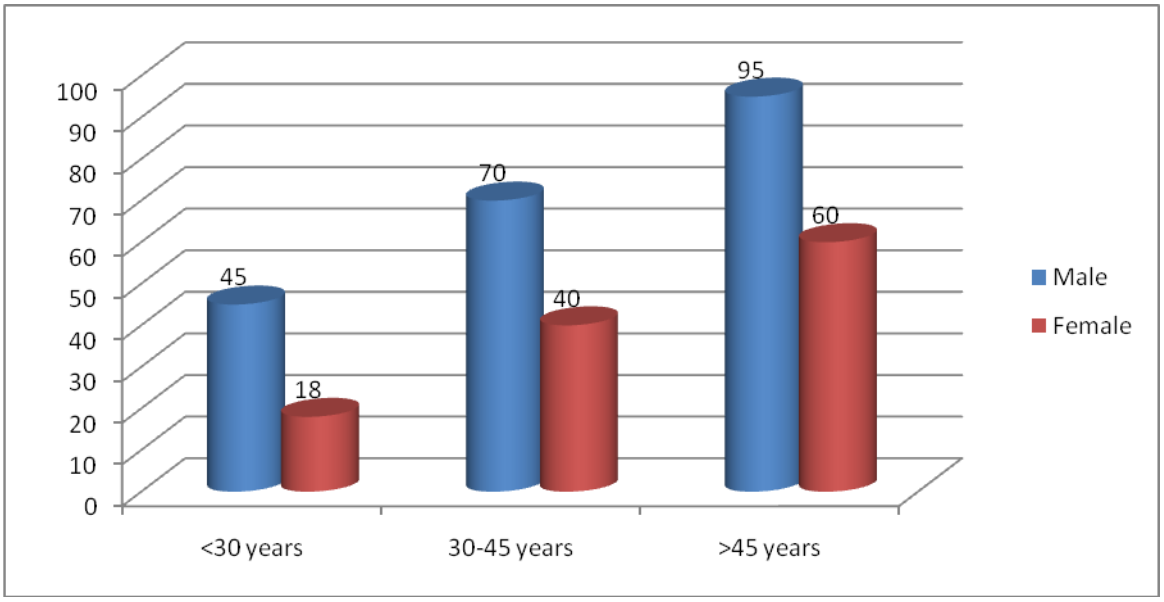
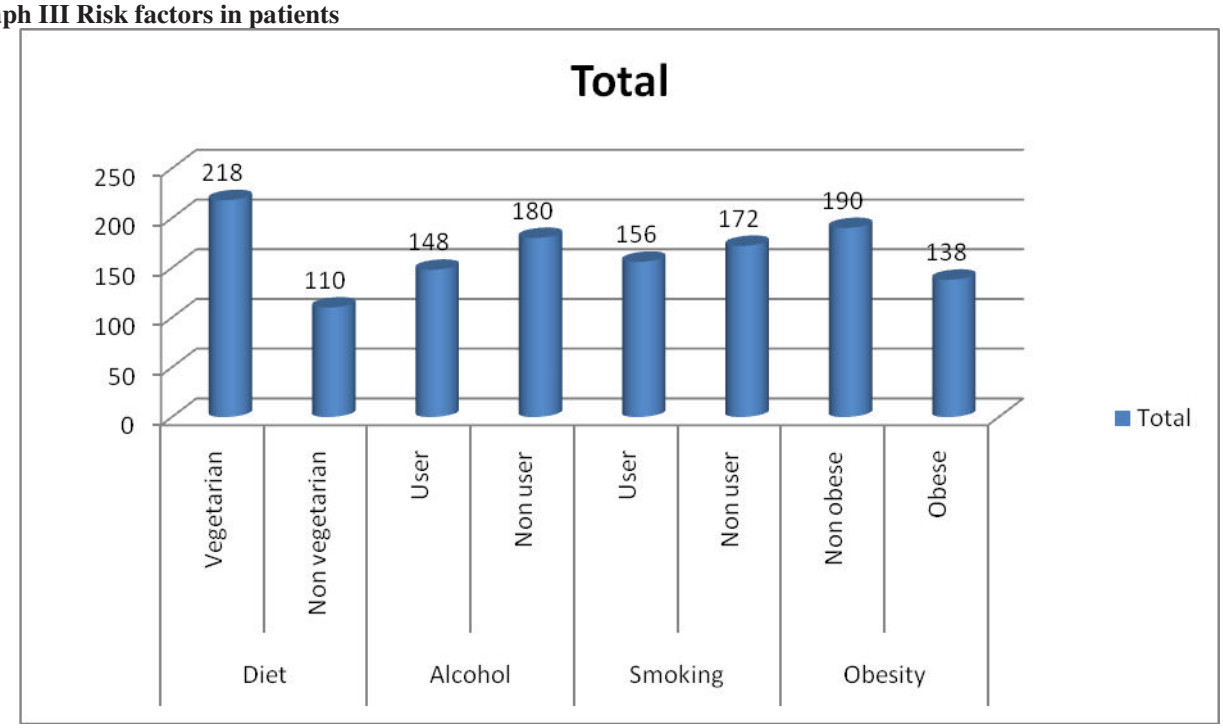


Table III Risk factors in patients

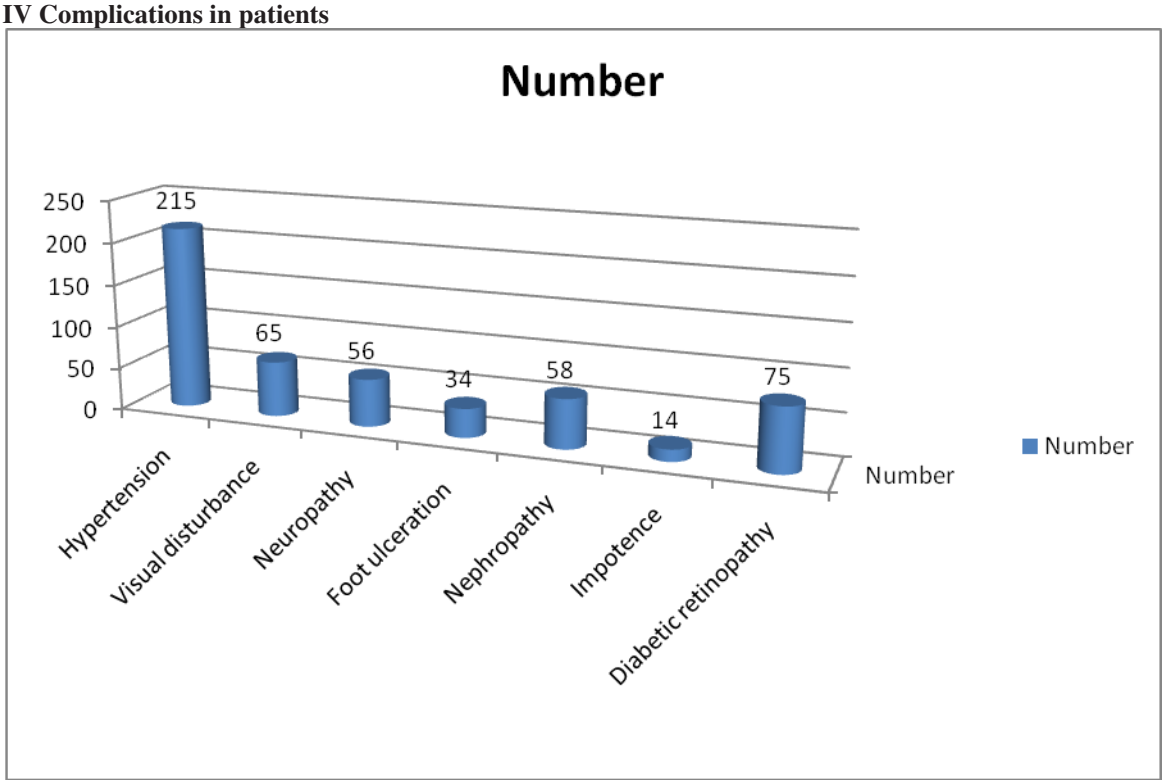
Risk factors	Category	Total	P value
Diet	Vegetarian	218	0.05
	Non vegetarian	110	
Alcohol	User	148	0.02
	Non user	180	
Smoking	User	156	0.01
	Non user	172	
Obesity	Non obese	190	0.01
	Obese	138	

Table III, graph III shows that 218 patients were vegetarian, 110 were non- vegetarian, 156 patients were smokers and 148 were alcoholic. 190 patients were obese. The difference was statistical significant (P<0.05).

Graph III Risk factors in patients



Graph IV Complications in patients



Graph IV shows that common complications were hypertension in 215, visual disturbance in 65, neuropathy in 56, foot ulceration in 34, nephropathy in 58, impotency in 14 and diabetic retinopathy in 75. The difference was significant ($P<0.05$).

DISCUSSION

Diabetes mellitus, a chronic metabolic non communicable disease (NCD), has attained epidemic proportions worldwide.[6] According to the International Diabetes Federation (IDF), at the end of 2030, the number of people with type 2 diabetes mellitus will increase to 552 million. India will contribute 21% of cases, which is very high for a single country.[7] The present study was conducted to assess complications in type II diabetes mellitus patients.

In this study, out of 328 diabetic patients, males were 210 and females were 118. Age group <30 years had 45 males and 18 females, age group 30-45 years had 70 males and 40 females and age>45 years had 95 males and 60 females. Roaeid et al[8] found that overall 129 (59.7%) of the patients were found to have been affected by one or more of the diabetic complications. Complications were identified mainly among type II diabetic patients. The age of patients, type of diabetes, and medication were strongly associated with the occurrence of diabetic complication but self-reported adherence, attitude, and knowledge level of patients and the family history were not associated with the presence of complication. Diabetic nephropathy is associated with morphological impairment of the glomerular endothelial cell barrier and the glomerular basement membrane. This, in turn, leads to an elevation of protein filtration in urine, reflecting disturbed protein degradation in the diabetic patient. Oxidative stress progression in DM can induce gene expression of angiotensinogen, leading to renal function impairment.[9]

Diabetic retinopathy is also known as diabetic eye disease. Risk of blindness in diabetic subjects is associated with prolonged incidence of retinopathy, which in most patients is usually revealed to have been going on for decades, with the risk of losing vision increasing in time. HG can induce diabetic retinopathy through stimulation of PKC. The activation of PKC can result in elevation of many metabolic pathways, stimulation of cell growth and apoptosis, and increase in cellular permeability. Changes in these processes are associated with the progression of different diabetes induced vascular complications, including cardiomyopathy, atherosclerosis, neuropathy, nephropathy and retinopathy.[10] We found that 218 patients were vegetarian, 110 were non- vegetarian, 156 patients were smokers and 148 were alcoholic. 190 patients were obese. Common complications were hypertension in 215, visual disturbance in 65, neuropathy in 56, foot ulceration in 34, nephropathy in 58, impotency in 14, and diabetic retinopathy in 75 patients. Chronic HG may lead to either sensory or motor neuropathic problems or autonomic nervous system dysfunction, including arrhythmias, gastroparesis, incontinence and sexual dysfunction. However, patients with long-term diabetes may have one or more types of neuropathies. Erectile dysfunction is a common complication of DM, and is mainly related to disturbed communication between vascular and neuronal systems due to either weakened blood circulation in penile tissue or impairment of neuronal stimulation.[11]

Autonomic neuropathy may cause abnormal function of the digestive system. Diabetic patients with autonomic neuropathy may complain of symptoms such as early satiety, bloating, nausea, vomiting, abdominal pain and heartburn. Slowed stomach emptying, or gastroparesis, is usually detected in diabetic patients with prolonged HG. Diabetic enteropathy also leads to acid reflux disease, delayed bowel movement, constipation, diarrhoea, and increased rate of bacterial, viral and fungal gastrointestinal tract infections.[12]

CONCLUSION

Author found that common complications in type II diabetes mellitus patients were hypertension, visual disturbances, neuropathy, foot ulceration, nephropathy, impotency and diabetic retinopathy.

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