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Original Research

Evaluation of diabetic foot ulcer in type I diabetes patients

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ABSTRACT:
Background: Hyperglycemia resulting from impaired insulin secretion, impaired insulin action, or both is a hallmark of diabetes mellitus (DM), a conglomeration of many metabolic diseases. The present study was conducted to evaluate diabetic foot ulcer (DFU) in type I diabetes patients. **Materials & Methods:** 58 type I diabetes patients with diabetic foot ulcer (DFU) age ranged 6-17 years of both genderswere carefully evaluated. Parameters such as duration of diabetes, HDL, triglycerides, LDL, and complications such as retinopathy and nephropathy etc. was recorded. **Results:** Out of 58 patients, 32 were males and 26 were females. Duration of diabetes was <5 years in 39 and >5 years in 19. HDL <40 was seen in 26 and >40 in 32. Triglycerides level <150 in 40 and >150 in 18, LDL level <100 in 35 and >100 in 23. Nephropathy was seen in 14 and retinopathy in 16 patients. The difference was significant (P< 0.05). **Conclusion:** The incidence of DFU was relatively high. Diabetic nephropathy, diabetic retinopathy were common complications among type I diabetes patients.
Keywords: diabetes mellitus, Hyperglycemia, nephropathy

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INTRODUCTION

Hyperglycemia resulting from impaired insulin secretion, impaired insulin action, or both is a hallmark of diabetes mellitus (DM), a conglomeration of many metabolic diseases. One of the biggest worldwide health concerns of the twenty-first century is diabetes, a serious public health issue that is rapidly becoming epidemic in scope. Both type 1 and type 2 diabetes are becoming more common; 463 million persons had diabetes in 2019.[1]

Long-term problems that impact nearly every bodily system are a hallmark of diabetes mellitus. It is linked to higher incidences of macrovascular problems including atherosclerosis and stroke as well as a number of microvascular problems like retinopathy, neuropathy, and nephropathy. One of the most frequent side effects of diabetes mellitus is diabetic foot ulcers, which frequently lead to lower extremity amputations.[2] It's not often clear if DFU falls under the microvascular or macrovascular category, because the majority of diabetics have peripheral artery disease and/or neuropathy. This may suggest that it is a microvascular disease as well as a macrovascular disease. However, none of the aforementioned consequences are more severe than those that affect the foot, and diabetic foot issues are becoming more common as a result of patient and medical neglect.[3]

Major health and socioeconomic issues associated with diabetic foot ulcers have a negative impact on patients' quality of life and place a major financial strain on them and their families.[4] Diabetic foot issues are the cause of almost half of all hospital bed days due to diabetes and account for more hospital admissions than any other long-term complications of the disease.[5]The present study was conducted to evaluate diabetic foot ulcer (DFU) in type I diabetes patients.

MATERIALS & METHODS

The study was carried out on 58 type I diabetes patients with diabetic foot ulcer (DFU)age ranged 6-17 years of both genders. All gave their written

consent to participate in the study.
Data such as name, age, gender etc. was recorded. All were carefully evaluated. Parameters such as residence, duration of diabetes, HDL, triglycerides, LDL, and complications such as retinopathy and nephropathy etc. was recorded. Results thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 58		
Gender	**Male**	**Female**
Number	32	26

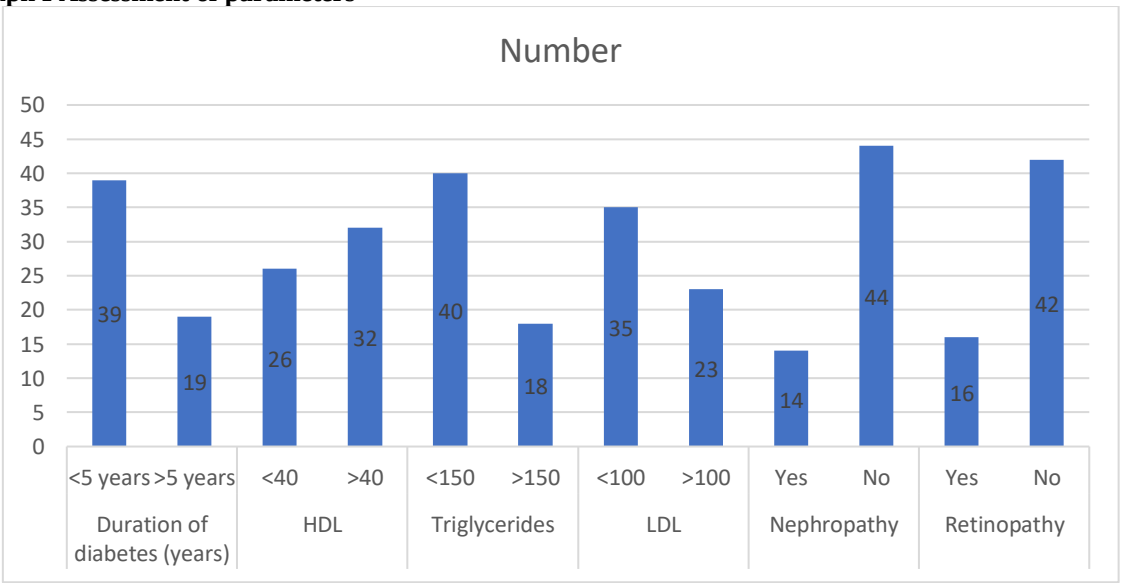
Table I shows that out of 58 patients, 32 were males and 26 were females.

Table II Assessment of parameters

Parameters	Variables	Number	P value
Duration of diabetes (years)	<5 years	39	0.04
	>5 years	19	
HDL	<40	26	0.02
	>40	32	
Triglycerides	<150	40	0.01
	>150	18	
LDL	<100	35	0.03
	>100	23	
Nephropathy	Yes	14	0.01
	No	44	
Retinopathy	Yes	16	0.01
	No	42	

Table II, graph I shows that duration of diabetes was <5 years in 39 and >5 years in 19. HDL<40 was seen in 26 and >40 in 32. Triglycerides level <150 in 40 and >150 in 18, LDL level <100 in 35 and >100 in 23. Nephropathy was seen in 14 and retinopathy in 16 patients. The difference was significant (P< 0.05).

Graph I Assessment of parameters



DISCUSSION

Diabetes Mellitus (DM) is a metabolic disorder characterized by the presence of chronic hyperglycemia accompanied by greater or lesser impairment in the metabolism of carbohydrates, lipids and proteins.[6] DM is probably one of the oldest diseases known to man. It was first reported in Egyptian manuscript about 3000 years ago.[7] In 1936, the distinction between type 1 and type 2 DM was clearly made. Type 2 DM was first described as a component of metabolic syndrome in 1988.[8,9]Type 1 diabetes mellitus (juvenile diabetes) is characterized by beta cell destruction caused by an autoimmune process, usually leading to absolute insulin deficiency.[10] Type 1 is usually characterized by the presence of anti–glutamic acid decarboxylase, islet cell or insulin antibodies which identify the autoimmune processes that lead to beta cell

destruction. Eventually, all type1 diabetic patients will require insulin therapy to maintain normglycemia.[11,12] The present study was conducted to evaluate diabetic foot ulcer (DFU) in type I diabetes patients.

We found that out of 58 patients, 32 were males and 26 were females. Nyamu et al[13]determined the prevalence of diabetic foot ulcers and the risk factors in a clinic-based setting.Patients with both type 1 and 2 diabetes mellitus who had active foot ulcers in both outpatient and inpatient units.One thousand seven hundred and eighty- eight patients with diabetes mellitus were screened and 82 (4.6%) were found to have foot ulcers. The males and females with diabetic foot ulcers were compared in age, duration of foot ulcers, blood pressure, glycaemic control, neurological disability score and their proportion. Diabetic foot ulcers occurred mostly in patients who had had diabetes for a long duration. The types of ulcers were neuropathic (47.5%), neuroischaemic (30.5%) and ischaemic (18%). The neuropathic ulcers had significantly poorer glycaemic control compared to other types and the longest duration (23.3 weeks). Ischaemic ulcers had significantly higher total cholesterol and diastolic blood pressure compared to other ulcer types. Wagner stage 2 ulcers were the commonest (49.4%) but stage 4 ulcers had their highest neuropathic score (7.8/10) and longest duration (23.6 weeks). Aerobic infective pathogens were isolated from 73.2% of the ulcers.

We found that duration of diabetes was <5 years in 39 and >5 years in 19. HDL <40 was seen in 26 and >40 in 32. Triglycerides level <150in 40 and >150 in 18, LDL level <100 in 35 and >100 in 23. Nephropathy was seen in 14 and retinopathy in 16 patients. Deribe B et al[14]assessed prevalence and factors influencing diabetic foot ulcer among diabetic patients. All of the study subjects were interviewed which gives 100% response rate with the mean ± SD age of 50.72 ± 13.39 years. Out of the total 216 study subjects, about 32(14.8%) has diabetic foot ulcer, 129(59.7%) were male, 61(28.2%) from rural, 132(61.11%) were overweight, 97(44.5%) have poor diabetic foot self care practice and 80(37%) of them have secondary education. rural residence (AOR=4.074, 95% CI 1.262-13.151), absence of co-morbidity (AOR=0.611, 95% CI 0.131-0.955), mean arterial blood pressure greater than 90(AOR=5.113, 95% CI 1.285-20.347), duration of diabetes for more than 10years (AOR=8.452, 95% CI 2.365-30.994), are independent factor associated with DFU

The shortcoming of the study is small sample size.

CONCLUSION

Authors found that the incidence of DFU was relatively high. Diabetic nephropathy, diabetic retinopathy were common complications among type I diabetes patients.

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