Original Article

Diabetic Foot

Descriptive Study on Diabetic Foot in Diabetic Patients at PMCH Nawabshah

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ABSTRACT

Objective: Diabetic foot is common and frequent problem in medical ward, in this study we will determine the knowledge and foot care, common cause of diabetic foot in patients with DM and treatment out come.

Study Design: Descriptive / cross sectional study

Place and Duration of Study: This study was conducted at the Department of Medicine, PMCH, Nawabshah from June 2015 to December 2016.

Materials and Methods: 108 patients were selected for this study. Both male and female participated. Informed consent was taken from all the patients. Study was done using questionnaire translated into Sindhi and Urdu languages. Male were 78 and Female 30.

Results: 78 were male and 30 were female mean age was 52.61 $^{+-}$ 4.21. Non healing wound was present on right foot in 90 patients and left foot in 28 patients. Gangrene was present in 30 patients RBS, FBS and HAlc was elevated in all patients. Curettage was done in 53 patients and amputation was done in 13 patients. All patients were on Insulin therapy and broad spectrum antibiotics were given to all patients.

Conclusion: Diabetic foot is common problem in our country. Main reason is uncontrolled blood sugar and awareness of the patients. Most of the patients come with irregular diet on and off treatment. Duration of diabtes was prolonged in all patients. Education of the patient about disease diet and proper treatment of diabetes. Lifestyle of the patient and morbidity and mortality can be reduced.

Key Words: Diabetes mellitus, Diabetic foot, Ischemia, Neuropathy, Gangrene

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INTRODUCTION

Diabetes mellitus is global health problem, over past two decades its incidence is increased[1] Epidimiologically 30 million cases of diabetes were present in 1985. 177 million in 2000. 285 million in 2010 and more than 360 milion people will be affected by DM in 2030.[2] DM occurs in developed countries but recent new cases of type 2 DM are found in developing countres.[3] One of the complication of Diabetec foot ulcers, result due to combination of minor trauma infection foot deformity, peripheral neauropathy.[4] One lower limbs is lost every 30 seconds due to diabetic foot Globally majority of hospital admissions are due to Diabetic Foot.[5] Diabetic foot is associated with hospitalization, morbidity and long time of stay in hospital than other complication of DM.[6] Newly diagnosed type 2 diabetes mellitus have peripheral vascular disease or peripheral neuropathy about 10%.

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Global prevalence of diabetic foot is increasing worldwide[7] In diabetic patients stiffness of ligaments is due to non enzymatic glycation . Loss of protective sensation and loss of coordination of foot and leg muscles are due to neuropathy, Both elevate mechanical stress during walking. Majority of
diabetic patients are not aware of foot care regular foot examination. Regarding complication of diabetes mellitus amputation of lower limb is preventable.[8]
In patients with diabetes mellitus lower limb amputations are due to foot ulcer caused by peripheral vascular disease, poor cleaning of foot, bare foot walking unsuitable foot wear and delay in medical treatment.[8] These risk are modified by education of the patient.[8] Physical examination of the patient having diabetic wound is divided into examination of wound and general condition of limbs, assessment of vascular insufficiency (Ischemia). Sensory examination of foot or assessment of neuropathy and
Staging of diabetic foot wound, including depth of soft tissue and bony involvement,[9] investigations necessary are blood CP ,RBS, FBS HbA1c, creatinine, x-ray ,CT, MRI ,Doppler ultrasound, CT, MRI
Treatment of diabetic wound depends upon managing systemic and local factors[10] give up smoking. glycemic control, control of blood pressure, hyperlipidemia, ischemic heart disease if present obesity, renal insufficiency[11] offload the wound by therapeutic foot

wear.[12] Use of saline similar dressings daily[12]. indeed debridment and appropriate antibiotic to treat osteomylitis and infection Application of recombinant growth factors or grafts[13]. If arterial insufficiency is not present, hyper baric oxygen is beneficial.

MATERIALS AND METHODS

This study was conducted in the department of Medicine PMCH, Nawabshah. 108 diabetic patients were included in this study. Both male and female patients participated. Informed consent was taken from all the patients questionnaire was given to all the patients translated into local languages Sindhi and Urdu. Data collected using questionnaire. Detailed history was taken. Duration of diabetes, type of diabetes, dietary habits, smoking history, treatment history other complication of diabetes, physical Examination, Examination of foot sensory neuropathy was assessed by 10 gm, monofilament, force applied on one or more anatomic sites on the planter surface of foot on each foot area.[14]

Vibration sense was observed by using 128Hz tuning fork. ankle jerk and patellar jerk. Palpation of dorsal is pedis, posterior tibial artries, Doppler ultrasound of the limb. Inspection of the skin hair nails presence of any callus, corn or ulcers. Any foot deformity statical analysis was done using SPSS 15 version.

RESULTS

Table No.1: Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	35.00	1	.9	.9	.9
	39.00	1	.9	.9	1.9
	44.00	1	.9	.9	2.8
	46.00	1	.9	.9	3.7
	47.00	2	1.9	1.9	5.6
	48.00	3	2.8	2.8	8.3
	49.00	11	10.2	10.2	18.5
	50.00	11	10.2	10.2	28.7
	51.00	17	15.7	15.7	44.4
	52.00	9	8.3	8.3	52.8
	53.00	8	7.4	7.4	60.2
	54.00	9	8.3	8.3	68.5
	55.00	11	10.2	10.2	78.7
	56.00	5	4.6	4.6	83.3
	57.00	3	2.8	2.8	86.1
	58.00	5	4.6	4.6	90.7
	59.00	4	3.7	3.7	94.4
	60.00	3	2.8	2.8	97.2
	61.00	2	1.9	1.9	99.1
	62.00	1	.9	.9	100.0
	Total	108	100.0	100.0	

108 patients were selected for this study 78 were female and 30 were females. 56 were farmers, 29 housewife, 15 businessmen and 6 were in Govt. service. 81 patients were uneducated, 8 patients primary, 13 patients middle and 6 patients matriculate. 83 patients were smokers.

Table No.2: Neuropathy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	10	9.3	9.3	9.3
	1.00	98	90.7	90.7	100.0
	Total	108	100.0	100.0	

Table No.3: Ischemic

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	21	19.4	19.4	19.4
	2.00	87	80.6	80.6	100.0
	Total	108	100.0	100.0	

Table No.4: HbA1C

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	6.90	2	1.9	1.9	1.9
	7.00	9	8.3	8.3	10.2
	7.50	14	13.0	13.0	23.1
	7.80	2	1.9	1.9	25.0
	8.00	21	19.4	19.4	44.4
	8.30	1	.9	.9	45.4
	8.40	1	.9	.9	46.3
	8.50	16	14.8	14.8	61.1
	9.00	32	29.6	29.6	90.7
	9.50	4	3.7	3.7	94.4
	10.00	6	5.6	5.6	100.0
	Total	108	100.0	100.0	

Table No. 5: Type Diabetes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	14	13.0	13.0	13.0
	2.00	94	87.0	87.0	100.0
	Total	108	100.0	100.0	

Table No.6:: Descriptive Statistics

	N	Min.	Max.	Mean	Std. Deviation
Age	108	35.00	62.00	52.6111	4.21797
Sex	108	1.00	2.00	1.2778	0.44999
Occupation	108	1.00	4.00	1.8056	0.93187
Neuropathy	108	0.00	1.00	0.9074	0.29121
Ischemic	108	0.00	2.00	1.6111	0.79524
FBS	108	145.00	231.00	179.6667	17.91569
RBS	108	240.00	530.00	380.2870	63.87357
HbA1C	108	6.90	10.00	8.3713	0.80513
Hemoglobin	108	7.50	11.00	9.5556	0.91543
L.Count	108	9500	11230	10483.21	472.67972
Diabetes Type	108	1.00	2.00	1.8704	0.33746
Duration Diabetes	108	6.00	33.00	14.3148	5.99478
Education Level	108	1,00	4.00	1.4815	0.91183
Valid N(Listwise)	108				

Table No.7: Anova

	Sum of squares	df	Mean square	F	Sig
Sex					
Between Groups	1.241	1	1.241	6.441	0.013
Within Groups	20.426	106	0.19		
Total	21.667	107			
Occupation					
Between Groups	13.283	1	13.283	17.681	0.000
Within Groups	79.634	106	0.751		
Total	92.917	107			
Neuropathy					
Between Groups	0.138	1	0.138	1.636	0.204
Within Groups	8.936	106	0.084		
Total	0.974	107			
Ischemic					
Between Groups	22.493	1	22.493	52.781	0.000
Within Groups	45.173	106	0.426		
Total	67.667	107			
FBS					
Between Groups	2381.043	1	2381.043	7.896	0.006
Within Groups	31962.957	106			
Total	34344.00	107			
RBS					
Between Groups	48786.255	1	48786.255	13.337	0.000
Within Groups	387755.8	106			
Total	436542.1	107			
HbA1C					
Between Groups	5.382	1	5.382	8.917	0.004
Within Groups	63.979	106	0.604		
Total	69.361	107			
Hemoglobin					
Between Groups	0.123	1	0.123	0.145	0.704
Within Groups	89.544	106	0.845		
Total	89.667	107			
Age					
Between Groups	480.974	1	480.974	35.836	0.000
Within Groups	1422.693	106	13422		
Total	1903.667	107			
L.Count					
Between Groups	51.216	1	51.216	0.000	0.988
Within Groups	23906543	106	225533.423		
Total	23906594	107			
Duration. Diabetes					
Between Groups	2305.035	1	2305.035	158.631	0.000
Within Groups	1540.261	106	14.531		
Total	3845.296	107			
Education Level					
Between Groups	14.428	1	14.428	20.519	0.000
Within Groups	74.535	106	0.703		
Total	88.963	107			

Non healing wound was present in right foot in 90 patients and in left foot in 28 patients. Depth of wound was wegner's class1 in 21 patients, 42 in class2, 32 in class3, 13 in class 4. Gangrene was present in 30 patients, curettage was done in 53 patients and amputation was done in 13 patients. 21 patients were pure neuropathic, 10 patients were pure ischemic and 77 patients were mixed. On examination of foot pure

ischemic were 2pts 82 were mixed neuropathic using the test by monofilament tuning fork and Doppler ultrasound. RBS range – 240 to 53, FBS- 145 to 231, HbA1c- 6.9 to 10, Cholesterol level- increase more than 200 in 92 pts, Retinopathy -30pts, Hypertension-80patients, Blood cp-Hb%- 7.5 to 11, L leukocyte count increase from 9500 to 11230, In statical analysis male sex denoted by 1 and female by 2, education level uneducated by 1, primary by 2, middle by 3 and matric by 4. Occupation farmer by 1, housewife by 2, businessmen by 3 and Govt. service by 4.

DISCUSSION

Globally number of patients with Diabetes mellitus will increase 366 million in 2030[15] out of 108 patients majority of the patients was male, with irregular dietary pattern. Patients were not aware of the severe complications about diabetes mellitus, it was observed that long duration of diabetes increases the incidence of diabetic foot as pathologic process occurs in about 10 years. This problem may occur due to delayed diagnosis

It was observed in previous study in srilanka[16] . Majority of the patients developed diabetic foot in 5th to 6th decades of life. Age about 55-60 years have been found in other studies.[17] Risk of diabetic foot estimated to be 15% in patients with diabetes mellitus. In recent studies it could be 25%[7] Peripheral neauropathy observed to be common cause of diabetic foot.[18] Education of the patients is necessary for loss of sensation in feet even in minor trauma. Education about blood glucose control in patients with prolonged history of diabetes. These patients must have other complications like diabetic risk of injury[19] Presence of Micro vascular and macro vascular complication of diabetes mellitus, regular screening is compulsory Diabetic Nephropathy and retinopathy increased diabetic foot could be due to micro angiopathic changes in studies diabetic foot healing. Process delayed due to renal impairment[20] It was observed hypertension with diabetic foot several studies.[21] Smoking with Diabtic foot higher percentage of smokers was found in patients with amputation of limb.[21] Presence of char coat joint increases the risk of gangrene and amputation[22] Diabetic foot complication are increased by peripheral vascular disease Chronic complication of diabetes coronary artery disease CVD retinopathy associated with diabetic foot gangrene and amputation[23] Mosset al and larvery explained association between long duration of diabetes and foot complications[23] according to researchers diabetic foot and amputation increases with diabetes history more than 10 years[23] obesity was associated with increased risk of diabetic foot. Poor glucose control and HbA1c was contributory factor in diabetic foot and their contribution of peripheral neuropathy and micro vascular complication[24] Nurses as members of the diabetic care team play role in public education, patient care, health care health management and quality of life improve. Nurses help patients to have movement for those patients who have lost their foot. Nurses teach patients to use assists devices[25]

CONCLUSION

In this study main reason of diabetic foot was poor glycemic control for prolonged period. Development of peripheral neuropathy peripheral vascular disease associated with retinopathy, diabetic nephropathy hypertension, irregular dietary habits. And poor knowledge about diabetes treatment and its complications Educations about diabetes and diabetic foot self care is necessary management method. Education of foot care, motivation, support, financial assistance is necessary. Involvement of family member, psychological assistance, management of comorbidities retinopathy vasculopathy are helpful. It is necessary to start education about diabetic foot as the symptoms of neuropathy occurs give up smoking education about diet mobility, patients life style patients quality of life can be improved risk of amputation are decreased.

Author's Contribution:

Concept & Design of Study:	Jeando Khan Daidano
Drafting:	Akbar Hussain Yousfani & Saeed Khan
Data Analysis:	Akbar Hussain Yousfani & Saeed Khan
Revisiting Critically:	Saeed Khan & Jeando Khan Daidano
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