IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 20, Issue 6 Ser.7 (June. 2021), PP 01-04
www.iosrjournals.org

"A Study of Clinical Profile and Outcome of Diabetic Foot"

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ABSTRACT

INTRODUCTION- *The probability for occurrence to foot ulcers are being predicted to 5-10% of the diabetic population, for lower limb amputation it is to about 3%. People having diabetes further developing foot ulcers as a cause of sensory, motor, automatic deficient (neuropathy).*

AIMS AND OBJECTIVE-

- *To study the clinical profile of diabetic foot ulcer.*
- *To study and obtain data regarding complications in diabetic foot ulcers.*
- *To study the organisms isolated in diabetic foot ulcers*
- *To study and compare measures to decrease the morbidity due to diabetic foot ulcers.*

MATERIALS AND METHODS*- The study was conducted in department of general surgery SRMSIMS BAREILLY from year October 2018 to 2020 patient admitted and referred as a case of diabetic foot from emergency and surgical O.P.D in SRMS-IMS BAREILLY. Prospective analysis will be done in these patients & data collection will include particulars of the patient, detailed history, & examination, investigation , wound status.*

RESULTS*- Presentation of patient was pain, numbness , claudication ,edema , ulcer,deformity , trauma , gangrene The maximum volume of cases been categorised in the pain category followed by edema category. For the case of Wagner's Grade the maximum cases was seen in grade 3 demarcated as ulcer. Most common artery involved is posterior tibial and dorsalis pedis artery. The highest incidence been seen in E. coli for Wagner's Grade 3 category. all 100% patients needed aggressive surgical debridement & dressing, only 92% needed skin grafting, 72% needed secondary wound closure & 63% needed amputation (major & minor both). Maximum number of cases for dressing, debridement, SSG, secondary closure and for amputation been found in grade 3.*

DISCUSSION*- This study show that majority of the cases had the pain which denotes upto 89%, followed by Ulcer 81% and Edema which is 72%. All these presentations showed variation corresponding to the grades, age group and diabetes duration. From grade 4 onwards gangrene found to be increased. The* ***Reiber GE et al*** *report showed that 11.2 percent of all foot ulcer patients had a lower amputation of the extremity . Similar findings by* ***Lavery LA et al*** *showed that 71.8 percent of the initially presenting ulcers healed with debridement, while 16 percent required lower amputation of the extremity .*

KEYWORDS- Gangrene, Diabetic foot, debridement, dressings

Date of Submission: 01-06-2021 Date of Acceptance: 14-06-2021

I. Introduction

According to the ministry of health and family welfare report "The Diabetic foot Prevention and management in India" which came out in 2016 it has been predicted that India will become the diabetes capital of the world. The probability for occurrence to foot ulcers are being predicted to 5-10% of the diabetic population, for lower limb amputation it is to about 3%. Particularly in foot region the peripheral neuropathy induce dry skin formation, loss of sensational activity, reduced joint mobility increasing the risk of ulceration by slight accidental injury. People having diabetes further developing foot ulcers as a cause of sensory, motor, automatic deficient (neuropathy).

II. Aims And Objective

Aim of study- To study the clinical profile and outcome of diabetic foot patient .

Objectives of study-

- To study the clinical profile of diabetic foot ulcer.
- To study and obtain data regarding complications in diabetic foot ulcers.
- To study the organisms isolated in diabetic foot ulcers.
- To study and compare measures to decrease the morbidity due to diabetic foot ulcers.

MATERIAL & METHODS- Total 100 patients with diagnose case of diabetic foot attending surgical OPD or Emergency department from year 2018 – 2020 were enrolled in this prospective study and all relevant investigations were sent. Wound or blood culture will be defined as successful culture if they are positive within 3 days of admission

1-INCLUSION CRITERIA - Patient with diagnosed diabetic foot ulcers.

2-EXCLUSION CRITERIA- Foot ulcer secondary to venous disorders and arterial disorders ,lepromatous ulcers, fungal disease other then diabetes mellitus . Foot ulcer secondary to other causes of peripheral neuropathy like syringomyelia

3-SAMPLE SIZE- 100 Patients**.**

III. Results

TABLE 1
PRESENTATION ACCORDING TO WAGNER'S GRADE

PRESENTATION	WAGNER'S GRADE					
	1	2	3	4	5	Total
PAIN	8	26	29	18	8	89
NUMBNESS	5	3	9	6	5	28
CLAUDICATION	0	1	1	4	0	6
EDEMA	6	17	26	15	8	72
ULCER	9	23	31	9	9	81
DEFORMITY	3	11	10	9	8	41
TRAUMA	0	1	4	1	1	7
GANGRENE	1	7	3	17	9	37

The above table 1 shows the presentation according to Wagner's grade. The maximum volume of cases been categorised in the pain category followed by edema category. For the case of Wagner's Grade the maximum cases was seen in grade 3 demarcated as ulcer.

TABLE-2
DISTRIBUTION OF CASES ACCORDING TO LOWER LIMBS AFFECTED

WAGNER'S GRADE	LIMBS AFFECTED			
	Rt. Lower Limb	Lt. Lower Limb	Bilateral Lower Limb	P Vlalue
	NO	NO	NO	
1	4	5	1	<0.05
2	12	10	5	
3	17	11	4	
4	10	8	3	
5	2	1	6	
TOTAL	45	30	25	

TABLE 3
SELF FOOT CARE STATUS IN DIFFERENT GRADES

	WAGNER'S GRADE					TOTAL
	1	2	3	4	5	
DAILY INSPECTION OF FOOT	0	1	1	2	1	5
DAILY FOOT WASH	8	18	18	18	6	68
WEAR SHOES AFTER EXAMINING INSIDE	1	1	2	1	1	6
WALKS BARE FOOT	3	11	12	10	4	40
KNOWS DIABETIC	0	0	1	1	2	4

TABLE 4
GRADE WISE LOCATION OF ULCER

Wagner's grade	Location of ulcer				
	Toe	Heel	Dorsum	Sole	Malleoli
1	3	4	0	0	2
2	4	4	5	4	6
3	6	6	12	6	2
4	6	0	3	0	2
5	0	1	4	4	0
Total	19	15	24	14	12

The above table 4 shows the grade wise location of ulcer where dorsum part seen to be more prone to form ulcers. The least presence of having ulcers been observed in Malleoli part.

TABLE-5
STATUS OF PERIPHERAL PULSES IN DIFFERENT GRADES

PULSES		WAGNER'S GRADE					TOTAL
		1	2	3	4	5	
FEMORAL	**PRESENT**	10	27	33	21	9	100
	ABSENT	0	0	0	0	0	0
POPLITIAL	**PRESENT**	10	27	31	21	9	98
	ABSENT	0	0	2	0	0	2
ANTERIOR TIBIAL	**PRESENT**	9	21	28	14	0	72
	ABSENT	1	6	5	7	9	28
POSTERIOR TIBIAL	**PRESENT**	9	23	27	14	1	74
	ABSENT	1	4	6	7	8	26
DORSALIS PEDIS	**PRESENT**	9	20	28	8	0	65
	ABSENT	1	7	5	13	9	35

The above table 5 shows the status of peripheral pulses in different grades. The maximum peripheral pulse presence been observed in femoral region followed by poplitial part. The minimum presence been observed in posterior tibilal region.

IV. Discussion

The classification of wound with Wagner system showed the maximum cluster to fall in the grade 2 and 3 category cause might be due to lower educational status of the population which in turn delayed in the presentation process. Similar study in India by Bhupendra et al, shows grade 2 lesions to be most common (30.8%) followed by grade 3, grade 4 & grade 1. Right lower limb is affected more as compared to left. Laterality is because of the pressure distribution between the mid saggital line which vary between person to person and in general right limb take most of body pressure when compared to left . Results were in accordance that of ZhonghuaY. et al . Studies done on outpatients by A Sage et al, showed that there are more complaints about neuropathy, where as the pain complaint category is less in common in western society. In Indian context studies done by Bhupendra et al found that prevalence of numbness are more in common the rest parameters are in similar denomination with the present study. Foot care practices are less known to Indian population ; cause might be less awareness regarding this. Our study showed most common site of ulcer being on dorsum (24%) of foot followed by toe (19%), cause deduced to be because of occupation. For the cases related bacteriology of wound, E- Coli been found to be the most common bacteria that been isolated followed by the Pseudomonas. Studies done by C. Anandi et al, on this aspect also showed similar results. It was noticed that 100% of the indoor patient required surgical debridemet followed by dressings , but ultimately 63% of them landed for any form of amputation be it be major or minor in future course. Although 8% of patients died in our study, all were in grade 5 , but cause were multifactorial rather than diabetic foot alone.

V. Conclusion

- Prevalence of diabetes is increasing with time.
- Diabetes poses a severe health consequences in developing country like India.
- Diabetic foot is a multi- factorial problem.
- The diabetes problem should be intercepted early in course and strict diabetic control is mandatory for prevention of its consequences.

- Any foot ulcer / trauma in diabetic patient should be treated aggressively.
- Self foot care practices and awareness plays an important role in prevention of diabetic foot.
- Strict blood sugar control prevents ulcer formation, ulcer progression and amputation.
- Wide spread awareness programme and patient education will play a pivotal role in disease management

Acknowledgements

Dr Ashok kumar gupta and Dr Anil negi served as scientific advisors and critically reviewed the study proposal.

Ethical Clearance

The study was approved by the Institutional Ethics Committee.

Funding

This study received no fund.

Conflict Of Interest

The authors have no conflicts to disclose.

References

[1]. Abbott, C. A., Chatwin, K. E., Foden, P., Hasan, A. N., Sange, C., Rajbhandari, S. M., & Reeves, N. D. (2019). Innovative intelligent insole system reduces diabetic foot ulcer recurrence at plantar sites: a prospective, randomised, proof-of-concept study. *The Lancet Digital Health*, *1*(6), e308- e318.

[2]. Abdulrazak, A., Bitar, Z. I., Al-Shamali, A. A., & Mobasher, L. A. (2005). Bacteriological study of diabetic foot infections. *Journal of diabetes and its complications*, *19*(3), 138-141.

[3]. Ahuja, M. M. S., Sivaji, L., Garg, V. K., & Mitroo, P. (1991). *Prevalence of diabetes in northern India (Delhi area). Hormone and metabolic research*, *4*(05), 321-324. Anand, P., Terenghi, G., Warner, G., Kopelman, P., Williams-Chestnut, R. E., & Sinicropi, D. V. (1996). The role of endogenous nerve growth factor in human diabetic neuropathy. *Nature medicine*, *2*(6), 703-707.

[4]. Anandi, C., Alaguraja, D., Natarajan, V., Ramanathan, M., Subramaniam, C. S., Thulasiram, M., & Sumithra, S. (2004). Bacteriology of diabetic foot lesions. *Indian journal of medical microbiology*, *22*(3), 175.

[5]. Anandi, C., Alaguraja, D., Natarajan, V., Ramanathan, M., Subramaniam, C. S., Thulasiram, M., & Sumithra, S. (2004). Bacteriology of diabetic foot lesions. *Indian journal of medical microbiology*, *22*(3), 175.

[6]. Anjana, R. M., Ali, M. K., Pradeepa, R., Deepa, M., Datta, M., Unnikrishnan, R., ... & Mohan, V. (2011). The need for obtaining accurate nationwide estimates of diabetes prevalence in India-rationale for a national study on diabetes. *The Indian journal of medical research*, *133*(4), 369.

[7]. Apelqvist, J., Agardh, C. D., Castenfors, J., Larsson, J., & Stenström, A. (1989). Wound classification is more important than site of ulceration in the outcome of diabetic foot ulcers. *Diabetic medicine*, *6*(6), 526-530.

[8]. Armstrong, D. G., Lavery, L. A., Stern, S., & Harkless, L. B. (1996). Is prophylactic diabetic foot surgery dangerous?. *The journal of foot and ankle surgery*, *35*(6), 585-589.

[9]. ÅsaLinda Carlsson, Göran Sundkvist, Leif Groop, Tiinamaija Tuomi, Insulin and Glucagon Secretion in Patients with Slowly Progressing Autoimmune Diabetes (LADA), *The Journal of Clinical Endocrinology & Metabolism*, Volume 85, Issue 1, 1 January 2000, Pages 76–

[10]. 80, https://doi.org/10.1210/jcem.85.1.6228

[11]. Bantle, J. P., Wylie-Rosett, J., Albright, A. L., Apovian, C. M., Clark, N. G., Franz, M. J., ... & Wheeler, M. L. (2008). Nutrition recommendations and interventions for diabetes: a position statement of the American Diabetes Association. *Diabetes care*, *31*, S61-S78.

[12]. Boulton, A. J., Malik, R. A., Arezzo, J. C., & Sosenko, J. M. (2004). Diabetic somatic neuropathies. *Diabetes care*, *27*(6), 1458-1486.

[13]. Brash, P. D., Foster, J. E., Vennart, W., Daw, J., & Tooke, J. E. (1996). Magnetic resonance imaging reveals micro-haemorrhage in the feet of diabetic patients with a history of ulceration. *Diabetic medicine*, *13*(11), 973-978.

[14]. Brownlee, M., & Hirsch, I. B. (2006). Glycemic variability: a hemoglobin A1c–independent risk factor for diabetic complications. *Jama*, *295*(14), 1707- 1708.

[15]. Bybee JD, Rogers DE. (1964). The phagocytic activity of polymorphonuclear leucocytes obtained from patients with diabetes mellitus. J Lab Clin Med 1964; 64:1-13.

Dr Vishwanath Pratap Singh, et. al. "A Study of Clinical Profile and Outcome of Diabetic Foot."*IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 20(06), 2021, pp. 01-04.