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BIABHIG PATIENTS;
PRESENTATION AND OUTCOME IN SURGICAL WARD

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ABSTRACT... drmaghazi@hotmail.com. Objective: Diabetics develop complications as a result of infection, microangiopathic and neuropathic changes. All these complication can be anticipated and prevented with good glycemic control and maintaining good podiatric care. This study was conducted to determine the presentation and out come of diabetics in general surgical ward. Design: Observational cross sectional study Setting: Emergency and out patient department of South Surgical Ward, Mayo Hospital Lahore. Period: Six months (1st June to 30th November 2004), Material and methods: 51 patients with diabetes mellitus presenting, it included all the patients with diagnosed diabetes mellitus presenting with surgical complications relating to their diabetes. All other patients who were normoglycemic or known diabetics without any surgical complications were excluded. Patients presenting with ulcerations on foot and legs were classified on the basis of Wegners classification. Results: Out of 51 patients, 43.1%(22) had a diagnosis of diabetic foot, 33.3%(17) had an abscess and 23.5%(12) had an abscess. According to the Wagener's classification*. Class 2 was most common at presentation 34.8% and 23.5% of the patients presenting with diabetic foot had to undergo an amputation thus suffering from a permanent disability. Conclusion: Good surgical debridement and proper use of antibiotics is required as well as good glycemic control for early and safe recovery.

Keywords: Diabetes Mellitus, Carbuncle, Abscess. Diabetic foot.

INTRODUCTION

Diabetes mellitus is a common malady and is rampant throughout all ages and races. Its clinical consequences and complications have significant effect not only on the everyday life of the patient but also on the clinical outcome of the patients undergoing surgery and other medical interventions. More than 50% of diabetics are undiagnosed at presentation and even if they know, they have diabetes it is poorly controlled in >70 %of the cases. Although physicians manage it, there is overlap and complications are treated in other

specialties as well. They usually present on surgical floor in the form of abscess, carbuncles and diabetic foot which sometimes have grave consequences like loss of limb and amputations Diabetics develop these complications as a result of infection, micro-angiopathic and neuropathic changes. All these complication can be anticipated and prevented with good glycemic control and maintaining good podiatric care.

The control of diabetes mellitus, the control of infection and adequate debridement are important steps of management. Infection in these patients is caused by multiple organisms, which are isolated by surface swab and deep tissue culture.

This study was conducted to know the clinical status of patients with diabetes mellitus presenting in the surgical ward, management and their outcome.

MATERIAL & METHODS

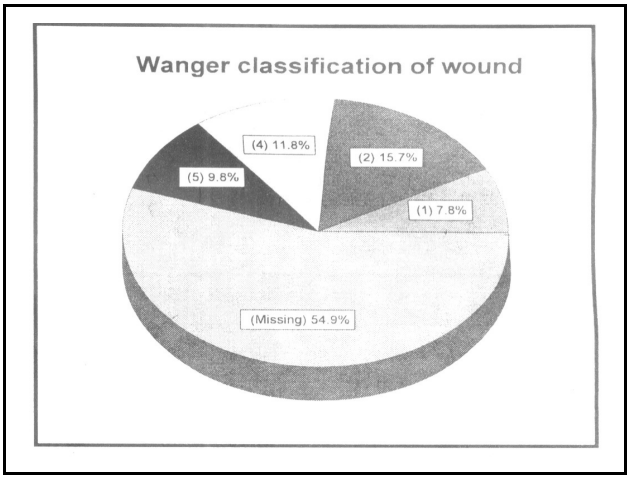
This observational, cross sectional, hospital based study included all the patients with diagnosed diabetes mellitus presenting with surgical complications relating to their diabetes. All other patients who were normoglycemic or known diabetics without any surgical complications were excluded.

A proforma was filled in for every patient after the consent which included the information like bio data, duration of diabetes mellitus, type of diabetes mellitus, current and in hospital glycemic control, associated complications of diabetes mellitus, diagnosis made in the ward, operations done and its detail antibiotics given and duration of treatment Ankle brachial index of all the patients was checked with a Doppler sonometer bilaterally and they were followed up in out patient clinic for the out come of their treatment and for any disabilities. Patients presenting with ulcerations on foot and legs were classified on the basis of Wegners classification.

RESULTS

There were a total of 51 patients. Out of these 57 %(29) were male and 43%(22) were females. Patients ranged in age from 28 years to 100 years of age and mean age was 53 years. 72.5%(37) patients had a complaint of a swelling (abscess or carbuncle or ulcerative swelling) and 27.5%(12) had a wound on foot. Out of these, 43.1%(22) had a diagnosis of diabetic foot, 33.3 %(17) had an abscess and 23.5%(12) had an abscess. Type 1 diabetes was present in 7.8%(4) and type 2 diabetes was present, in 92.2%(47) patients.

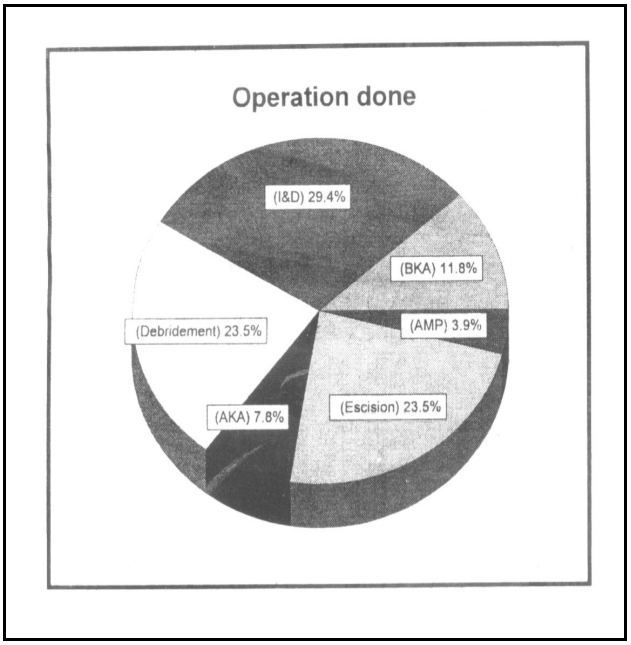
Patients presenting in surgical ward had duration of, diabetes mellitus ranging from <1 year upto 35 years and a mean age of 8.7 years. Wounds of patients presenting with a diabetic foot were classified according to the Wagener's classification. Class 2 was most common at presentation 34.8% followed by class 4(26.1%), class 5(21.7%) and class 1(17.4%).



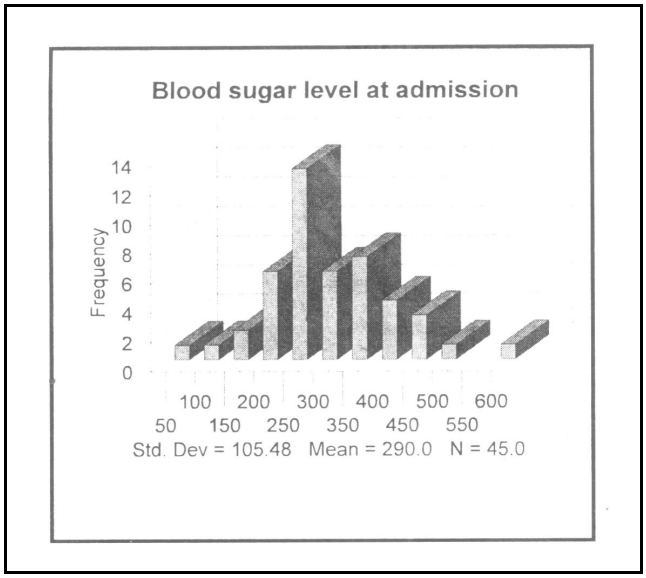
Diabetes is a multi- system disease and other complications in patients presenting with diabetes in surgical ward were peripheral neuropathy(25.5%), autonomicneuropathy (5.9%),retinopathy(5.9%), diabetic nephropathy , atherosclerosis (ischemic heart disease(13.7%) and cerebro -vascular disease(3.9%), peripheral vascular

disease (4%)and dementia(2%) .In several cases there was a combination of more than one complication of diabetes mellitus. Gas gangrene developed in 3 patients.

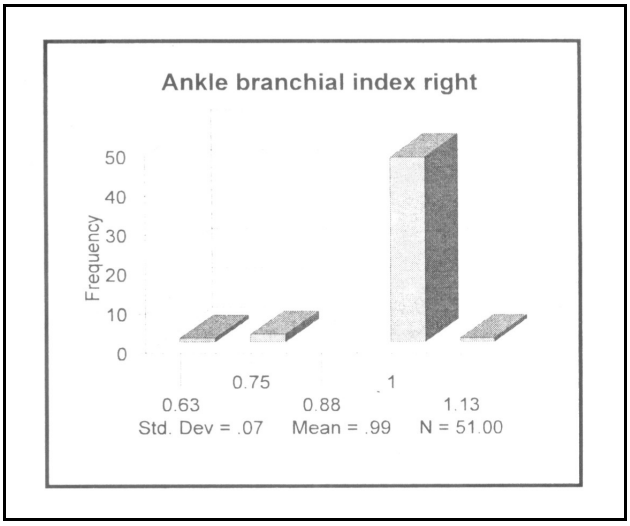
Associated comorbdities were many, most common being the hypertension (9.8%), and tuberculosis (3.9%) of cases. Others included fractures, renal stones, diabetic cataracts, blindness, bedsores, strokes, and inguinal hernias etc. The operations done included "incision and drainage" of abscess 29.4%(15), debridement of wounds and excision of carbuncle 23.5%(12) each, amputation was done in 23.5%(12) cases, most common being below knee amputation 11.8%(6), above knee amputations were done in 7.8%(4) and other amputations were 3.9%(2).



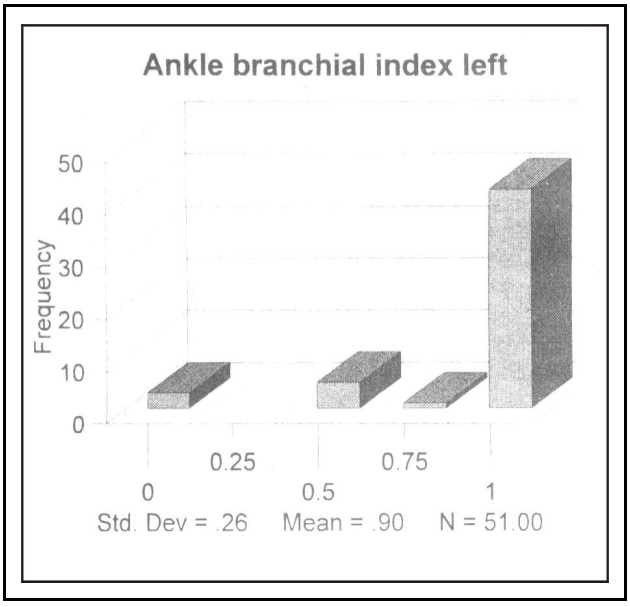
Pus drained was sent for culture and sensitivity in only 11.7% (6) cases. Diabetic control was poor at admission. Mean blood sugar level was 289.9 mg/dl minimum being 38mg/dl and maximum being 586 mg/dl. Blood sugar level at discharge was also documented, mean blood sugar level at discharge being 181.7mg/dl.



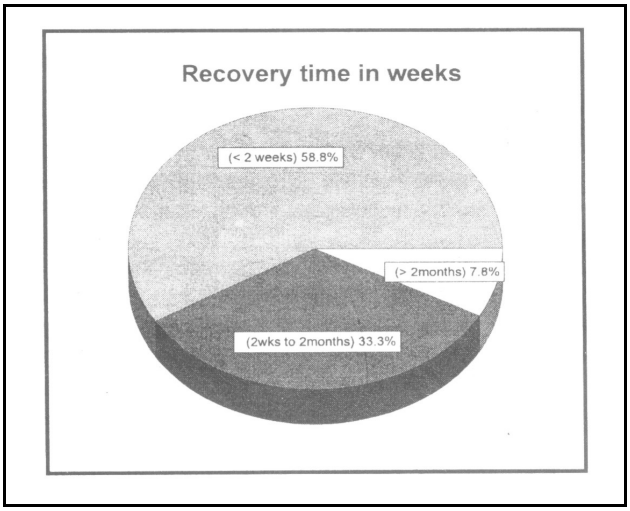
Ankle brachial index was done in all the patients			
Descriptive statistics	N	Min	Max
Ankle brachial index left	51	0.00	1.10
Ankle brachial index Right	51	0,60	1.10



Follow up of all patients in out patient department done, and recovery time was classified in weeks as follows:



Recovery time in weeks		
Recovery time	Frequency	%age
<2 weeks	30	58.8
2 weeks to 2 months	17	33.3
>2 months	4	7.8
total	51	100



Out of a total of 51 patients 78.4 %(40) had no permanent disability while 19.6%(10) had a permanent disability in the form of an amputation.

DISCUSSION

Diabetes mellitus is the ailment, which involves wide range of organs. Surgical complications of diabetes are devastating and if not treated properly. Patient generally present with abscesses, carbuncles and diabetic feet. In study conducted by zaman1 18.8% of diabetics present with diabetic foot but in our study 43.1% patient had a diabetic foot, 33.3% had an abscess and 23.5% presented with a carbuncle .Diabetic foot is therefore the most common complication of diabetes on surgical floor. This is mainly because of poor feet care, bad glycemic control and peripheral neuropathy.

Abscesses are common over hands and legs; these are due to minor cuts and secondary infection because of improper wound care and bad hygienic practices. Carbuncles are common over back and nape of neck. This is because of improper cleaning of this part of the body and thick skin.

Abscesses were treated by proper incision and drainage and carbuncles were excised with no long-term morbidity. All the patients were given proper empirical antimicrobial cover but culture sensitivity was performed in a very few number of patients. The main complication causing morbidity was a diabetic foot, thus making diabetes meilitus the main cause of non-traumatic amputations of lower limb.

Ankle brachial index is a good indicator of the peripheral vascular disease in diabetics. Normally the systolic blood pressure is higher in the ankles than in the arms. Obtaining the Ankle/Brachial Index, by comparing the blood pressures in the ankles to those in the arms, gives an indication of the extent of arterial narrowing and atherosclerotic disease. This assumes that the arteries are not

calcified, a condition, which is more common in diabetics (not the same as plaque build-up): calcified arteries are not compressible and a correct systolic blood pressure cannot be obtained.

We measure the systolic blood pressure by inflating a regular blood pressure cuff on both arms and ankles in turn and each time releasing the air slowly. A Doppler instrument that detects the sound of blood flow is held against the skin over the artery. The systolic BP is the point at which blood flow is first audible.

It is a quick, painless, non-invasive test. It is recommended that every patient over 50 years with hypertension, heart disease, or diabetes, and all older smokers, should have a baseline test to be repeated periodically to follow the success of therapy, or to detect progression of the disease. A lower ABI is associated with generalized atherosclerosis.

Wounds and ulcers on foot were classified according to the Wagners classification after thorough examination.

Grade 1 superficial ulcer, skin deep
Grade 2deep ulcers, usually with infection/cellulites, no
bone involvement

Grade Sbony involvement (osteomylitis), foot ulceration Grade 4localized gangrene (toes, forefoot, or heel) Grade Sgangrene of entire foot

According to apelqvist approximately 40%-60% of all amputations of the lower extremity are performed in diabetic patients. More than 85% of these amputations are precipitated by a foot ulcer deteriorating to deep infection and gangrene. In this study 11.8%of all diabetic patients under went below knee amputation, 7.8% above knee amputation and 3.9% other amputations (like Trans metatarsal, ray amputation etc.)

Diabetic foot ulcers and their morbidity is the result of two specific complications neuropathy and arteriosclerosis. Peripheral neuropathy is present in 25.5% of all the diabetics on presentation and arteriosclerosis can be assessed by ABI which shows a mean of 0.8 on left side and 0.98 on right side in this study . Prompt and appropriate treatment of both these complications can help reduce the chances of amputations.

Diabetic foot infection is polymicrobial and proper use of antibiotics in treatment of diabetic foot is contested: one view is to use antibiotics only in the presence of clinical infection: the other one is to give antibiotics freely to all patients with an ulcer. Edmonds has shown that there is no significant difference in the two groups however it is clear that diabetics who have clean ulcers associated with peripheral vascular disease and positive ulcerswabs should be considered for early antibiotic treatment .the diabetic foot is highly susceptible to repeat ulceration, and more prone to infection than other ulcers. This can only be dealt with aggressive treatment. Antibiotics cannot however make up for the role of adequate debridement and proper revascularization. Surgical treatment of infection consists of draining pus and removal of dead, necrotic and infected tissue. The surgeon must have a thorough knowledge of foot anatomy, and must be familiar with the effects the diabetes has on wound healing .the outcome of surgery-depends on the surgical skill, care and experience of surgeon. The outcome of foot ulcers is affected by wound depth, ischemia and glycemic control.

In this study we can see that glycemic control was very poor at presentation. Mean blood glucose at admission was 290mg/dl this can be ascertained by HbA1C to see the glycemic control over the past 3 months but we could not perform it because of its cost and nonavailibility.however good glycemic

control through insulin on sliding scale ad reduced the blood glucose level at discharge to 181mg/dl.this parameter has a proven value in the outcome of wound healing in diabetics.

Perioperative management of oral hypoglycemic agents in patients with well-controlled diabetes is particular to the class of medication being taken by the patient. The patient should discontinue long-acting sulfonylurea agents (i.e., tolazamide [Diabinese]) approximately 3 days before surgery. Newer sulfonylurea agents such as glyburide (DiaBeta) and glipizide (Glucotrol) have a half-life of 24 hours; even patients with tight control can safely stop such agents the morning before surgery without adverse effect. Patients on sulfonylurea agents who tend to have inadequate control (glucose value frequently in the 200s) should take the evening dose the night before surgery so that their- preoperative fasting glucose level is not prohibitively high. Thiazolidinediones should be stopped the night before surgery. Metformin should also be stopped the night before surgery to avoid the risk of lactic acidosis.

The perioperative sliding scale for insulin coverage in persons with type 2 diabetes is as follows:

* Serum glucose level of 150-200 mg/dL: Administer2Uofregularinsulinsubcutaneously. Serum glucose level of 201-250 mg/dL: Administer4 U of regularinsulin subcutaneously.
* Serum glucose level of 251-300 mg/dL: Administers U of regular insulin subcutaneously.
* Serum glucose level of 301-350 mg/dL: Administers U of regularinsulin subcutaneously. Serum glucose level of greater than 350 mg/dL: Administer 10 U of regular insulin subcutaneously.

During the surgery, the frequency of glucose monitoring of patients with well-controlled type 2 diabetes varies with (1) the type of anesthetic, (2) the stress of the procedure, and (3) the patient's response to the process. Anesthesia stresses the body independently of the surgical procedure; therefore, record glucose levels every 1-2 hours in patients under general anesthesia. Similarly, monitor patients undergoing physiologically stressful procedures even under regional block

Postoperative resumption of diet or oral hypoglycemic control depends on several factors. After minor surgery is completed and oral intake is tolerated, patients should return to their routine diabetic dietary schedule as soon as possible. Reinstitute oral hypoglycemic agents at half the usual dose on the day the oral diet is begun, and, assuming adequate glucose control, advance to the full preoperative regimen the next day (assuming a full diabetic diet is resumed).

According to oyibo median time of ulcer healing in diabetic foot was 10(8.8 to 11.6 weeks juicer area is also related to healing time while patients age,sex .duration /type of diabetes has no effect on outcome .in this study recovery time was least for abscesses .followed by carbuncles. 58.8% healed in less than 2 weeks time while in case of diabetic foot recovery time was 2 weeks to 2 months. In 7.8% cases it was >2 months.

Patient education regarding foot hygiene, nail care, proper footwear is crucial in reducing the risk of injury and ulcer formations. Family physicians have a pivotal role in the prevention and early diagnosis of diabetic foot complications.

CONCLUSION

Good glycemic control is key to prevent surgical complications. Ankle brachial index is a good index of the peripheral vascular disease and can be used to evaluate the limb condition in diabetics. Good surgical debridement and proper use of antibiotics

is required as well as good glycemic control for early and safe recovery.

Peripheral neuropathy is the most common complication in diabetics presenting in surgical ward. Early recognition of diabetic skin infections such as carbuncles and abscesses is easy but diabetic foot can be detected by routine feet examination and evaluation of ankle brachial index as a tool to detect the poor perfusion of limb,

HB A1C and ankle brachial index should be used as routine outdoor procedures to evaluate the patients presenting and treated for diabetic foot. '

REFERENCES

1. Boulton AJ, M enes P, Ennis WJ D diabetic foot ulcers :a frame work for prevention and care. Wound repair Regen1999Jan-Feb;7(1):7-16.

2. ApelqvistJ, LarssonJ. what is the most effective way to reduce incidence of amputation in diabetic foot? Diabetes Metab Res Rev 2000 Sep-0ct;16 Suppl 1:S75-83.

3. Apelqvist J. Wound healing in diabetes. Outcomes and Costs Clin Podiatr Med Surg 1998 Jan; 15(1): 21-39.

4. Oyibo SO, Jude EB.Tarawnch l,et al. The effects of ulcer size and site .patients age,sex and type and duration of diabetes on the outcome of diabetic foot ulcers. Diabet Med 2001 Feb;31(2):133-8.

5. Brem H, Jacobs T, Vilekytte L et al. Wound healing protocols for diabetic foot and pressure ulcers. Surg Technol Int2003;11:85-92.

6. Van Baal JG. Surgical treatment of the infected diabetic foot. Clin Infec Dis 2004 Aug 1 ;39 Suppl 2:S123-

7. Bal A. Diabetic foot: Magnitude of the problem. J Indian 11 Med Assoc 2002 Mar: 100(3): 155-7.

8. Munawwar Jamil, Zaheer Amin, Tariq Hassan, Jamil 12 Shaheen, Zia-ur-Rehman AM. Management of Diabetic Foot Infections. JCPSP Vol. 11 (10):606-10.

9. Khan A Z, Gondal KM, Ayaz M, Chaudhary Z. Four year experience of management of Diabetic Foot. Pak.j.surg 13 July-Sept 1995, Vol.11,No.3

10 Wagner F. The Dysvascular foot: a system for diagnosis and treatment. Foot Ankle 1981;2:64-122.

11. Stranden E, Slagsvold CE. Arterial ischemic ulcers idsskr Nor Laegeforen 2005 Apr 7;125(7):895-8.

12. Parameswaran Gl, Brand K, Dolan J. Pulse oximetry as a potential screening tool for lower extremity arterial disease in asymptomatic patients with diabetes mellitus. Arch Intern Med 2005 Feb 28;165(4):442-6.

13. Lange S, Diehm C, Darius H, Haberl R, Allenberg JR, Pittrow D et al. High prevalence of peripheral arterial disease and low treatment rates in elderly primary care patients with diabetes. Exp Clin Endocrinol Diabetes 2004 Nov;112(10):566-73.