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ANALYSIS OF SURGICAL COMPLICATIONS OF DIABETES MELLITUS

Arshad Amin[1], Shahid Nisar[1], Zafar Iqbal[1], Farooq Ahmed[2], Irshad Faiz[2], Zia Ullah[3]

[1]Department of Surgery, Bacha Khan Medical Complex Shah Mansoor, Swabi - Pakistan

[2]Department of Medicine, Lady Reading Hospital, Peshawar - Pakistan

[3]Department of Medical Education, Post Graduate Medical Institute Hayatabad Peshawar.

ABSTRACT

Objectives: To analyze various surgical complications in diabetic patients.

Material & Methods: This analytic study was conducted in Surgical B ward Lady Reading Hospital, Peshawar from January 2007 to December 2007. A total of 100 patients were enrolled in the study. Patients below 14 years of age, having medical complications of diabetes mellitus and patients already having done limb amputation due to diabetes mellitus were excluded from the study. Data included age, sex, duration of diabetes mellitus, type of diabetes mellitus, type of surgical complication, status of glycemic control and type of therapy, insulin, oral hypoglycemic drugs or both. All the data were analyzed by using computer program SPSS version 10.

Results: The number of male was 60 (60%) while females were 40 (40%). Ages of the patients were in the range of 21-80 years. Mean age was 51.22 ± 11.03 years. Abscesses were the most common complication observed in 40% cases. The next most common complication was diabetic foot observed in 30% cases. It was followed by cellulitis in 9% cases, diabetic hand in 8% cases, carbuncle in 7% cases and fournier's gangrene in 5% cases. There was a single patient of gangrenous gallbladder.

Conclusion: Surgical complications in diabetic patients are common. Most of these complications are infective in origin. Most common surgical complications are abscesses, diabetic foot and soft tissue infection. Type II diabetic patients are more prone to these surgical complications.

Key Words: Diabetes mellitus, abscesses, diabetic foot.

INTRODUCTION

Diabetes mellitus is a metabolic disorder due to absolute or relative deficiency of insulin secretion or insensitivity or resistance to its metabolic action on target cells resulting in hyperglycemia and glycosuia[1]. Diabetes mellitus affects 5-10% of united states population at some point in their lives[2]. Surgical complications of diabetes mellitus include diabetic foot, skin infections, carbuncles, foot abscess, hand abscess, ischiorectal abscess, Perineal abscess, renal abscess, emphysematous cholecystitis and fournier's gangrene. The importance of these surgical complications is increasing due to their increasing prevalence, morbidity and mortality. The objective of this study is to identify these complications. Thus identifying the variables (parameters) responsible for the development of these complications will help to lay down important principles of prevention and management of these complications.

Address for Correspondence:
Dr. Arshad Amin
Medical Officer
Department of Surgery,
Bacha Khan Medical Complex, Swabi - Pakistan
Cell: 0333-9429728
Email: arshadamin50@gmail.com

MATERIAL AND METHODS

This study was carried out at Surgical B Ward Lady Reading, Hospital, Peshawar, from January 2007 to December 2007. A total of 100 cases of diabetes mellitus with surgical complications were included in the study. Patients below 14 year of age, patient having medical complications of diabetes mellitus and patients having done already limb amputation due to diabetes mellitus were excluded from the study. The patients included in the study have undergone through detailed history and physical examination. Data included was age, sex, type of diabetes mellitus, type of surgical complication, duration of diabetes mellitus, status of glycemic control and type of therapy, insulin, oral hypoglycemic drugs (OHGD) or combination.

Qualitative variable like type of diabetes mellitus, type of surgical complication, status of glycemic control and type of therapy were calculated for frequency and

percentage. Mean ± standard deviation was calculated for age and duration of diabetes. For gender male to female ratio was calculated. All the data was analyzed by using computer program SPSS version 10.

RESULTS

The age of the patients ranged from 21 to 80 years. Mean age was 51.22 ± standard deviation of 11.03 years. (Table 1) Out of 100 cases, there were 60% males and 40% females with male to female ratio of 3:2. Regarding duration of diabetes mellitus and the development of complications minimum duration was 1 year and maximum duration was 20 years with a mean duration of 7.28 year ± standard deviation of 3.85. (Table 2)

Majority of the patients 72% were having type II diabetes mellitus while the remaining 28% were having type I diabetes mellitus. In majority of patients 80% status of glycemic control was poor, in 18% cases glycemic control was good and in 02% cases status of glycemic control was excellent. In this study majority of patients 70% were using oral hypoglycemic drugs, 22% cases were using insulin and 08% cases were using combination of both oral hypoglycemic drugs and insulin for treating their diabetes mellitus.

Table 1: Age-wise distribution of patients

Age range (in years)	No. of cases & percentage
21-30	05 (05%)
31-40	13 (13%)
41-50	27 (27%)
51-60	36 (36%)
61-70	18 (18%)
71-80	01 (01%)
Total	100 (100%)

Overall mean age 51.23+ (SD=11.03) years
Minimum age=23 years
Maximum age = 71 years

Table 2: Duration of diabetes mellitus in patients

Duration (in years)	No. of cases & percentage
1-5 years	40 (40%)
6-10 years	43 (43%)
11-15 years	14 (14%)
16-20 years	03 (03%)
Total	100 (100%)

Overall mean duration of diabetes mellitus 07.28 ± 03.8562) years
Minimum duration of diabetes mellitus =01 years
Maximum duration of diabetes mellitus = 20 years

Among the type of surgical complications of diabetes mellitus, abscesses were the most common complications observed in 40% cases. Perineal abscess, perianal abscess, thigh and buttock abscess and breast abscess were recorded in 8%, 7%, 6%, and 5% cases respectively. There was a single case each of neck abscess, scalp abscess, psoas abscess, perinephric abscess and anterior abdominal wall abscess. The next most common complication was diabetic foot observed in 30% cases. It was followed by cellulitis in 9% cases, diabetic hand in 8% cases, carbuncle in 7% cases and fournier's gangrene in 5% cases. There was a single case of gangrenous gall bladder.

DISCUSSION

Surgical complications in diabetes mellitus (DM) are common and expressed in various forms. These complications range from abscess to serious life threatening conditions like emphysematous pancreatitis. In our study surgical complications are common in middle age patients. The age range in our study is comparable with Faiz ur Rehman et al[3]. Most of the patients in our study presented in the age range of 51-60 years.

Regarding gender distribution these surgical complications were predominant in male gender than female gender. This observation is in confirmity with a local study done by Muqim RU et al[4].This high prevalence of surgical complications in males is due to the fact they are more exposed to the environmental effects like trauma.Furthermore they are less compliant than females in taking medications.

Most of the surgical complications in diabetic patients are infective in origin. Abscesses of various sites was the most common complication. Abscesses were common among those patients who were on oral hypoglycemic drugs and had poor glycemic control. Most of these abscesses preceded history of trauma.

Carbuncle and cellulitis constitute 16% of complications. This observarion is contrary to the study of Naheed et al in which carbuncle and furuncle constitute 41% of the complications[5]. This difference may be due to that these patients present more to dermatologists and general physicians than general surgeons. Fournier' gangrene is also a common complication in diabetic patients. It was present in 5% patients in our study while in a study done by Hasham N et al, out of 21 patients of fournier'gangrene 12 patients had diabetes mellitus[6].

The frequency of diabetic foot in our study is in confirmity with the study done by Muqim RU et al according to which approximately 10-25% of all diabetic patients develop some foot problem during the course of their illness from simple calluses to major abscesses and osteomyellitis[4]. According to another study 15% of diabetic patients develop foot problem during their

lifetime[7]. It was present in 13.7% of diabetic patients in the study of Mansour AA et al[8].

In our study these complications were more common in type II than type I diabetic patients. This observation is in confirmity with the study done by Mehmood T et al[9]. Since type II diabetes mellitus is more prevalent than type I diabetes mellitus so consequently complications may be more common in type II diabetes mellitus than type I diabetes mellitus. Furthermore since type II diabetic patients are usually taking Oral Hypoglycemic Drugs (OHGD) rather than insulin which are less effective than insulin in controlling blood glucose level.

CONCLUSIONS

Abscesses,diabetic foot, cellulitis and fournier`gangrene are common complications in diabetic patients. These complications are more common in middle age, male gender and in type II diabetic patients. Furthermore diabetic patients taking OHGD and having poor glycemic status are more prone to develop these complications.

LIMITATIONS

This is a single centre study having limited number of samples.So further multiple centres studies are needed to asses the magnitude and common predictors of surgical complications of diabetes mellitus.

RECOMMENDATIONS

It is recommended that individual teaching and counseling is an effective method to decrease the prevalence of these complications which will indirectly lessen the economic burden on families, communities and countries.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

Amin A: Idea and operating surgeon.

Nisar S: Data collection and typing.

Iqbal Z: Statistics.

Ahmed F: Statistics and follow up.

Fiaz I: Bibliography.

Ullah Z: Follow up.

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