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STUDY OF ADMISSIONS IN DIABETIC PATIENTS - CLINICAL SPECTRUM AND OUTCOMES

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ABSTRACT

India has the dubious distinction of being the 'Diabetic Capital' of the world. WHO states that the prevalence of Diabetes is expected to rise to 79,441,000 by 2030 in India. A prospective hospital-based study was conducted in the Casualty department of Kaushalya Medical Foundation Trust Hospital, a tertiary care centre in Thane district. The study was carried out in 231 diabetic patients out of which140 patients were males and 91 were females. The Diabetic patients presented with a wide spectrum of complaints. Fever was the commonest symptom, followed by dyspnea. The other common presentations were unconsciousness, foot ulcer, chest pain, loose motions, fever, urinary complaints, hemiparesis, altered sensorium, abdominal swelling, fall, pain in lower limbs, haematemesis and melaena. Highest percent of deaths in the study occurred in patients presenting with dyspnoea and fever. The study was undertaken to understand and spread awareness about the causes necessitating diabetic patients to get admitted to the hospital and to study the clinical profile, find an association between presentation and final outcome of such patients. This study would be useful to calculate the burden on health care system and accordingly to plan the appropriate management strategy.

KEYWORDS: Hyperglycaemia, Dyspnea, Acidosis, Hemiparesis.

INTRODUCTION

Diabetes mellitus refers to group of heterogeneous metabolic disorders that share the phenotype of Hyperglycaemia with disturbances of carbohydrate, fat, and protein metabolism, resulting from defects in Insulin secretion, Insulin action or both.

Previously recommended etiologic classification of Diabetes Mellitus used the terms *insulin-dependent diabetes* and *non-insulin dependent diabetes.* Presently the terms *type*1 and *type*2 diabetes (with Arabic numerals) have been adopted for the most common forms of diabetes mellitus.[1]

Studies have shown that the prevalence of diabetes in urban Indian adults is about 12.1%, Type 2 diabetes is 4-6 times higher in urban than in rural areas. Throughout the world, the prevalence of type 2 diabetes has increased dramatically in the past decades. Although the prevalence of both type 1 and type 2 DM is increasing worldwide, the prevalence of type 2 DM is expected to rise more rapidly in the future. Decreased physical activity, increasing obesity and changes in dietary habits have been implicated in this epidemic.[2-4]

The effects of diabetes mellitus include long term damage, dysfunction, and failure of various organs, especially the eyes, kidneys, heart and blood vessels. Diabetes may present with characteristic symptoms such as thirst, polyuria, blurring of vision, weight loss, and polyphagia, and in its more severe forms, with ketoacidosis or nonketotic hyperosmolality, which, in the absence of treatment, leads to stupor, coma, and death. Often symptoms are not severe or may even be absent.[5]

Due to the specific complications of diabetes and increasing frequency of non-specific problems, patients are seldom admitted in hospital as an acute disorder with the classical triad of polydipsia, polyphagia and polyuria. Some patients present for the first time with acute myocardial infarction or stroke. Due to increasing prevalence of atherosclerotic vascular disease, the hospitalization pattern of diabetics is changing worldwide.[6]

There is a paucity of published data available regarding the hospitalization pattern of diabetic patients in tertiary care hospitals in India.

We conducted a study on 231 diabetic patients who presented to casualty department in hospital and studied the spectrum of presenting complaints and followed them to see the outcome at discharge.

MATERIALS AND METHODS

A prospective analytical study was carried out of diabetic patients presenting to the casualty department of Kaushalya Medical Foundation Trust Hospital, which is a tertiary care centre in Thane district. The study was conducted for a period of 18 months for 231 diabetic patients of which 140 were males and 90 females. Patients included were followed up until discharge from hospital or death. Clinical and demographic information were recorded using structured questionnaire.

The criterion for inclusion of the patients in the study were - Diabetic patients above 18 years of age, Patients taking treatment for Diabetes for at least 6 months, Diabetic patients presenting as an emergency (medical and surgical) and All known cases of gestational diabetes presenting as an emergency.

The criterion for exclusion in the study were - Diabetic Patients below 18 years of age, Diabetes detected after admission, Diabetic Patients for elective surgical admissions. The patients had a mean age of 63.34±12.27 with maximum patients falling in the range of 55 to 72 years.

Screening of all patients for any diabetic complications along with Haematological and Biochemical investigations were done. Data collection was also carried out using interviews and questionnaire. Statistical procedures like chi square Test, Crammer's V, were used.

Table 1: Frequency and percent of Female and Male patients in different age groups.

		Gender		Total
		Female	Male	
Age Group	22 to 36 Frequency Column %	3	5	8
		3.3%	3.6%	3.5%
	37 to 54 Frequency Column %	14	31	45
		15.4%	22.1%	19.5%
	55 to72 Frequency Column %	55	68	123
		60.4%	48.6%	53.2%
	73 to 87 Frequency Column %	19	36	55
		20.9%	25.7%	23.8%
Total	Frequency Column %	91	140	231
		100%	100%	100%

RESULT

231 diabetic patients were included for the study and their gender wise distribution was as per Table No. 1

The admitted patients showed a wide spectrum of complaints which are shown in Figure 1.

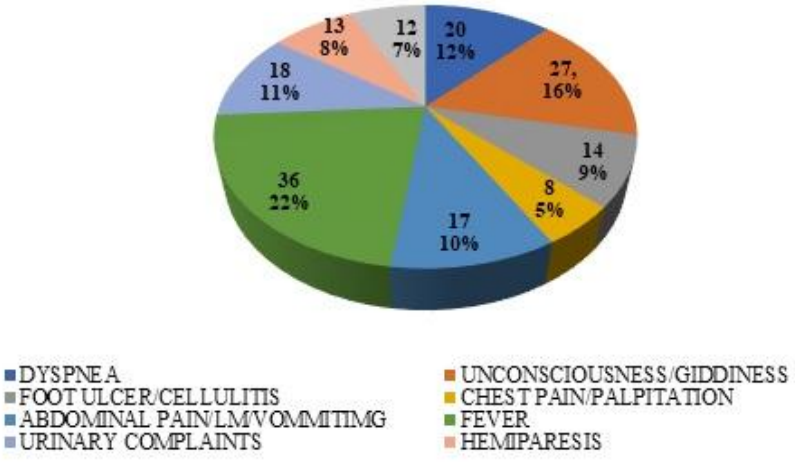

Figure 1: Patient's complaints registered at the time of admission.

On critical comparative study of the admission pattern of male and female patients the complaints presented and their numbers were as shown in the Figure 2. It shows that the number of males is higher as compared to

females with respect to complaints like unconsciousness/giddiness and fever.

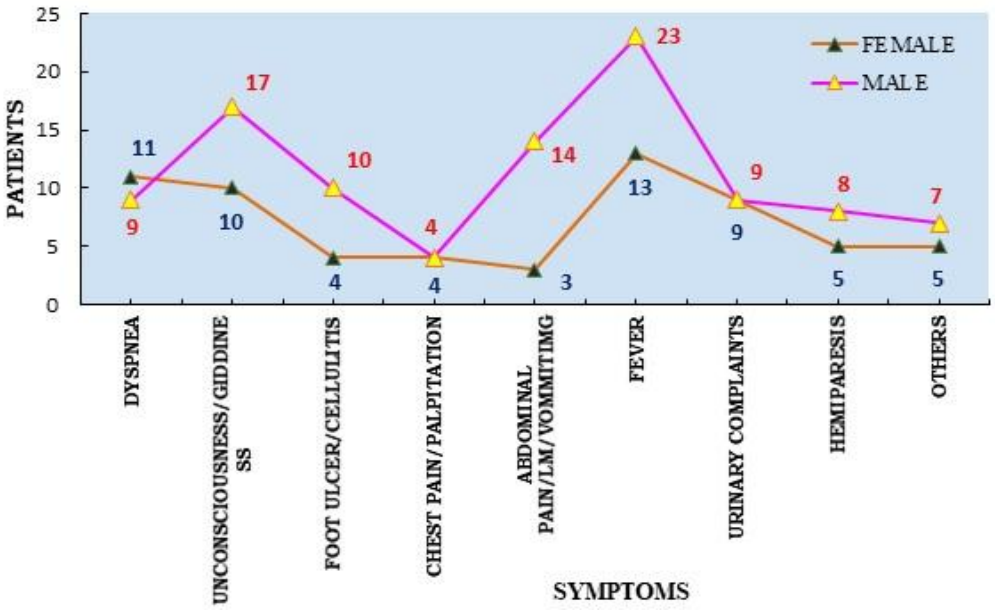

Figure 2: Comparison of presenting complaints in admitted male and female patients.

After the comparative study the outcome of the admitted patients was critically studied and the results found are indicated in the Table 2.

Table 2: Outcome of the admitted patients.

S. No.	Reason for Admission in Hospital	Outcome: count(percent)		Total
		Discharge	Death	
1	DYSPNEA Count % within Outcome	26	8	34
		13.1	25	14.7
2	UNCONSCIOUSNESS /GIDDINESS Count % within Outcome	21	0	21
		10.6	0	9.1
3	FOOT ULCER/CELLULITIS Count % within Outcome	15	0	15
		7.5	0	6.5
4	CHEST PAIN/PALPITATION Count % within Outcome	7	5	12
		3.5	15.6	5.2
5	ABDOMINAL PAIN/LM/VOMITTING Count % within Outcome	21	0	21
		10.6	0	9.1
6	FEVER Count % within Outcome	43	8	51
		21.6	25	22.1
7	URINARY COMPLAINTS Count % within Outcome	10	2	12
		5	6.3	5.2
8	HEMIPARESIS Count % within Outcome	10	3	13
		5	9.4	5.6
9	Others Count % within Outcome	28	6	34
		14.1	18.8	14.7
10	Two Or More Reasons Count % within Outcome	18	0	18
		9	0	7.8
	Total of Column Count	**199**	**32**	**231**
	% within Outcome	**100**	**100**	**100**

Table 2 shows differences in the distribution of discharged and dead patients across various reasons for admission in hospital, chi-square test was used to confirm the significance in the difference. The Chi-square value was statistically significant and the Crammers V value confirmed a strong relation

Table 3: Results of Chi-square test and Crammer's V for Reasons for admission in Hospital by Outcome Cross tabulation (n = 231)

Chi-Square			Crammer's V	
Value	df	p-value (2-sided)	Value	p-value
24.067	9	.004	.323	.004

To identify the reasons significant for the "discharge" and "death", chi-square test was applied for each pair. These results are presented in Table 4.which showed that in patients presenting with fever, dyspnoea, urinary complaints, hemiparesis and others - there was significant relation between these complaints and outcome.

Table 4: Chi square test results to identify the difference between "discharge and death.

Reason for Admission in Hospital	Chi-Square Results for Comparisons Between Discharge and Death		
	Value	df	p-value
DYSPNEA	9.53	1	0.002*
UNCONSCIOUSNESS /GIDDINESS	Comparison not possible		
FOOT ULCER/ CELLULITIS	Comparison not possible		
CHEST PAIN/ PALPITATION	0.33	1	0.56
ABDOMINAL PAIN/ LM VOMITTING	Comparison not possible		
FEVER	24.02	1	<.0005*
URINARY COMPLAINTS	5.33	1	0.02*
HEMIPARESIS	3.77	1	0.05*
OTHERS	14.24	1	<.0005*
Two Or More Reasons	Comparison not possible		

(* in the table indicates the significant values)

DISCUSSION

In the present study 61% of patients were males and 39% were females showing a male preponderance.

In our study the most common reasons for admission were Fever- which occurred in 23% of the patients. The most common cause of fever in diabetes is infections. Patients with diabetes are predisposed to infections. A study by Shah and Hux in 1999 compared all people with diabetes mellitus (DM) in Ontario, Canada to matched non-DM controls. The risk ratio for diabetic vs. non diabetic persons was 1.21. In the present study 25% of deaths were in patients presenting with fever which is statistically significant. Dyspnoea was the presenting complaint in 14% patients in the study. Dyspnoea also accounted for the highest percentage (25%) of deaths in the study along with fever.

Unconsciousness/ giddiness was the next common reason for admissions accounting for 16% of admissions. Fonseca AS and Davidsohn SA, in 2006, correlated dizziness with impaired glucose metabolism in their study and reached the conclusion that Dizziness is a prominent indicator of glucose metabolism alterations. Urinary incontinence, is a common problem many health care providers encounter among their caseload of people with diabetes.[7] Urinary complaints were present in 9% of the patients in our study.

Stroke was the presenting complaint in 19% patients. It has had a proven association with diabetes since long. The Northern Kentucky stroke study in 2005 concluded that, diabetes and stroke go hand in hand. It is the most important risk factors for ischemic stroke, in patients less than 65 years of age.[8] Foot ulcers patients formed 8% of the complaints. This is quite small compared to the study by Ajayi, Ajayi where majority (37.29%) of the patients were admitted for diabetic foot ulcer. In the Multan study 29% patients presented with foot ulcers.[9,10] Among the 7% patients included in the "others" category were patients presenting with loss of appetite, altered sensorium, abdominal swelling, fall, pain in lower limbs, hematemesis and malaena.

CONCLUSION

The mortality in diabetic patients is higher than that in non-diabetics. Infective disorders and septicaemia continues to play a dominant role in diabetes-related mortality. The most common reason for admission was fever, stressing the increased incidence of infections in diabetic patients. Highest percentage of deaths in diabetics were seen in patients presenting with Dyspnoea on admission. The rising trend of diabetes suggests for increased screening for early detection and also to prevent progression to end stage diseases. Hence in a country like India, with its large burden of diabetes it is the need of the day to evolve strategies for primary prevention of diabetes and its complications. Early screening and therapeutic interventions are some steps towards achieving this goal and need to be implemented.

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