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STUDY OF EMERGENCY PRESENTATIONS AND COMPLICATIONS OF DIABETES MELLITUS IN ADOLESCENTS AND YOUNG ADULTS

Medicine

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ABSTRACT

Diabetes Mellitus [DM] comprises a group of common metabolic disorders that share the phenotype of Hyperglycemia. Several different type of DM; type1, type2, gestational diabetes, are caused by a complex interaction of genetics, environmental factors & life style choices. India has largest number of diabetic population. Majority of diabetic patients are of younger age and live long enough to develop acute and chronic complications. Prevention and management of diabetes and its complications has become an medical challenge, which is not matched by budget allocation for health care in India

KEYWORDS

Diabetes Mellitus [DM], Diabetic ketoacidosis [DKA], Hyperosmolar Hyperglycemic State [HHS]

INTRODUCTION

India has largest number of diabetic population and majority of diabetic them are of younger age and live long enough to develop acute and chronic complications. In India, it is estimated that annual cost of diabetic care could be RS- 9, 02,001 million& average expenditure per patient would be RS-4500. These expenses increase proportionally with years of diabetes duration and also with presence of various acute and chronic complications. Prevention and management of diabetes and its complications has become an medical challenge, which is not matched by budget allocation for health care in India Until recently almost all adolescents and young adults with diabetes had type 1 but younger people are getting type 2 diabetes due to obesity, overweight and sedentary lifestyle. These young diabetics may struggle with emotional reactions to their conditions and reactions of others in society. These young diabetics and their families will need a period of adjustment regarding routine blood glucose monitoring, management of diet, injecting insulin and facing various complications arising from inadequate and missed insulin dosage.

To prevent various complications in young diabetics needs education about diet, insulin therapy, self glucose monitoring and how to face various complications arising from diabetes. After all, diabetes is a lifelong condition, so tasks and skills to manage it must be continued lifetime.

So, adolescents and young adults with diabetes are A UNIQUE GROUP with special social, clinical and psychological problems. Finally, further research is required focusing on UNIQUE RISK FACTORS, PRESENTATIONS AND COMPLICATIONS of these adolescents and young adults, which will help in prevention, risk stratification and development of newer treatment modalities, ultimately reducing burden of diabetes in health sector

AIMS:

Primary Aims:
1. To study modes of presentations of   Diabetes mellitus in adolescents and young adults.
2. To study complications of Diabetes Mellitus in adolescents and young adults.

Secondary Aims:
1. To educate about lifestylemodifications
2. To educate about avoiding emergencies.

MATERIALS & METHODS:

In present clinical study 60 indoor diabetic emergencies were studied in detail at Pandit Dindayal Upadhyay Hospital, Rajkot during the period of 1 year.

1) INCLUSION CRITERIA :
1) Age group between 13 to 30 years.
2) Both male and female included.
3) All the patients with diabetic emergency in 13 to 30 year age group

and those who had given consent for study included.

2) EXCLUSION CRITERIA:
1) Age less than 13 and more than 30.
2) Non diabetic emergencies are excluded.

RESULTS:
TABLE – 1
AGE

Age group	No of Patients (N=60)	Age group
13 to 18 yr	24	(40%)
19 to 30 yr	36	(60%)

TABLE 1 shows that in present study 24(40%) patients were adolescents and 36(60%) were young adults. These data shows that there is increase in incidence of diabetes among the susceptible young patients as compared to adolescent age group in study population.

TABLE -2
GENDER

Gender	No Of Patients (N=60)	Percentage
MALE	29	(48%)
FEMALE	31	(52%)

TABLE 2 shows that in present clinical study there is almost equal or slightly higher female 31(52%) predisposition as compared to male patients 29(48%), M:F ratio being 1:1.06.

TABLE -3
PRESENTATIONS OF THE PATIENTS AT THE TIME OF ADMISSION

Presentation	No. Of Patients (N=60)	Percentage
Polyuria	22	36.7%
Polydipsia	20	33.3%
Fatigue	15	25.0%
Weight loss	09	18.3%
Nausea or vomiting	20	33.3%
Abdominal pain	22	36.7%
Fever	16	26.7%
Giddiness and perspiration	04	6.0%
Impaired consciousness level	10	16.6%
Breathlessness and pedal edema	01	1.6%
Non specific	05	8.4%

Table 3 shows the various presentations of the patients at the time of admission. Typical symptoms of DKA such as nausea/vomiting and abdominal pain accounted for about 40% of hospital admission in this present study. Other symptoms of hyperglycemia like polyuria, polydipsia and fatigue were present in 36.7%, 33.3% and 25.0%

respectively. Impaired consciousness level (16.6%) and giddiness/ perspiration (6.0%) were the main presenting symptoms for hypoglycemia. 1.6% patients who presented with breathlessness and pedal edema were diagnosed as DM nephropathy, which is a chronic complication.

TABLE -4
STATUS OF DIABETES AT THE TIME OF PRESENTATION IN EMERGENCY

Status Of The Patients	No. Of Patients (N=60)	Percentage
Newly Diagnosed	27	45%
Diagnosis Established Previously	33	55%

Table 4 shows the diabetic status of the patients at the time of study. 55% patients were already diagnosed cases of DM while 27(45%) were newly diagnosed. This large percentage of newly diagnosed cases presenting with a complication is probably due to poor screening among susceptible population.

TABLE – 5
ACUTE COMPLICATIONS

Complication	No. Of Patients (N=59)	Percentage
DKA	42	71.1%
Hypoglycemia	17	28.9%
HHS	00	-

Table 6 shows various acute presentations of DM. most common complication occurring among DM patients is DKA, accounting for 42(71%) in present study. 17(28.9%) patients presented with hypoglycemia.

TABLE – 6: DKA
TABLE 6A: PRESENTATION OF DKA IN 1ST TIME DIGNOSED CASES

Presentation	No. of Patients (N=27)	Percentage
Polyuria	19	86.3%
Polydipsia	17	77.7%
Fatigue	15	68.1%
Weight Loss	09	40.9%
Abdominal Pain	10	45.5%
Nausea	06	27.3%
Fever	07	25.9%
Nonspecific	05	18.5%

Table 6A shows that in the present study polyuria 19(86.3%) & polydipsia 17(77.7%) were the typical symptoms of DKA in newly diagnosed patients. As compared to already diagnosed cases of DM, the symptoms like fever, nausea and abdominal pain are significantly less in newly diagnosed patients presenting with DKA. 5(18.5%) patients were incidentally detected as DKA while admitted for other medical conditions like LRTI, Acute gastroenteritis etc.

TABLE 6B: PRESENTATION OF DKA IN PREVIOUSLY DIGNOSED CASES

Presentation	No. Of Patients (N=16)	Percentage
Nausea Or Vomiting	14	87.5%
Abdominal Pain	12	75%
Fever	09	56.5%
Polyuria	03	18.7%
Polydipsia	03	18.7%

Table 6B shows the presentation of DKA in previously diagnosed cases of DM. As evident from table, DKA in an already diagnosed case of DM presents mainly with nausea/vomiting and abdominal pain with about 80% of the cases. Symptoms like polyuria, polydipsia are significantly less in an established case of DM presenting with DKA as compared to newly diagnosed cases.

TABLE 6C: PRECIPITATING FACTORS FOR DKA

Precipitating Factor	No. Of Patients (N=42)	Percentage
Infection	26	61.9%
Treatment Defaulter	12	28.5%
Others	04	9.6%

TABLE 6C shows various precipitating factors for DKA. 26(61.9%)

patients had infection as a precipitating factor for DKA. 12(28.5%) patients were treatment defaulters during present study. In a small percentage of patients, DKA was precipitated by various conditions like pregnancy, physical exertion, etc.

TABLE 6D: INFECTIONS PRECIPITATING DKA

Type Of Infection	No. Of Patients (N=26)	Percentage
UTI	10	38.5%
LRTI	06	23.1%
ACUTE GASTOENTERITIS	08	30.7%
SKIN AND SOFT TISSUE	02	7.7%

TABLE 6D shows the various infections precipitating DKA. UTI, LRTI and AGE account for the 10(38.5%), 6(23.1%) and 8(30.7%) cases respectively. The above mentioned data shows the importance of maintaining a high index of suspicion among the susceptible population with infection.

TABLE 6E: TREATMENT IN PREVIOUSLY DIAGNOSED CASES OF DIABETES PRESENTED WITH DKA

Type	No. Of Patients (N=15)	Percentage
Regular Treatment	03	20%
Irregular Treatment	12	80%

TABLE 6E shows treatment in previously diagnosed cases of DM presented with DKA. Data shows that poor compliance to treatment is the major precipitating factor among the study group. 3(20%) patients developed DKA while on prescribed anti diabetic treatment which may be due to other precipitating factors like infections.

TABLE 7: HYPOGLYCEMIA
TABLE 7A: PRESENTATION OF HYPOGLYCEMIA

Presentation	No. Of Patients (N=17)	Percentage
Tingling and Numbness	03	17.6%
Giddiness and Perspiration	04	23.5%
Impaired Consciousness Level	10	58.9%

Table 7A shows the various presentation of hypoglycemia in patients. In 10(58.9%) patients hypoglycemia manifested as impaired consciousness level which varies from drowsiness to total loss of consciousness. Tingling/numbness and giddiness/perspiration are the other major symptoms of hypoglycemia occurring in 3(17.6%) and 4(23.5%) patients respectively.

TABLE 7B: PRECIPITATING FACTORS FOR HYPOGLYCEMIA.

Precipitating Factor	No. Of Patients	Percentage
Omission Of Food/ Reduced Food Intake	15	88.2%
Renal Disease	02	11.8%

Table 7B shows various precipitating factor for hypoglycemia. As evident from the data omission of food/reduced food intake is the main attributing factor for hypoglycemia. Many factors like poor patient's education and community customs are responsible for this situation.

TABLE 7D: TREATMENT PRIOR TO DEVELOPMENT OF HYPOGLYCEMIA

Antidiabetic Treatment	No. Of Patients	Percentage
Insulin	12	60.6%
OHA in combinations	05	29.4%

Table 7D shows that hypoglycemia is mainly associated with patients under insulin therapy rather than with OHA.

TABLE – 8
OUTCOME

Outcome	No. Of Patients	Percentage
Discharged	58	96.6%
Expired	02	3.4%

Table 8 shows that mortality in the present study was 2(3.4%), which was due to DKA with septicemia.

CONCLUSIONS:

1) There is increased incidence of diabetes in young age group as compared to adolescents. This can be attributed to poor early screening among susceptible population.

2) There is no definite sex predisposition for diabetes and its complications in young age group.

3) Typical presentations of DKA such as nausea/ vomiting and abdominal pain with symptoms of hyperglycemia like polyuria, polydipsia and fatigue among young population should raise a clinical suspicion of DM and its complication.

4) The large number of newly diagnosed diabetic individuals in the present study highlights importance of screening in young age group.

5) First time diagnosed DKA presents with symptoms like polyuria, polydipsia and fatigue, while DKA in a previously diagnosed patients presents mainly with nausea/vomiting or abdominal pain.

6) Irregular treatment is a main precipitating factor for DKA after infection, emphasizing importance of patient education regarding compliance to prescribed therapy.

7) Early control of infection is essential in diabetics to prevent development of complications.

8) Poor patient education, motivation and faulty dietary habits are responsible for development of complications even in patients on treatment.

9) In view of increasing trend in the number of young diabetics, health care personals should maintain a high index of suspicion for the same.

10) The most important part of any treatment strategy is patient education and information.

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