Original Research Article

A study of clinical profile and factors associated with diabetic ketoacidosis at tertiary health care center

Ramdas Bokil

Associate Professor, Department of Medicine, MIMSR Medical college and YCR Hospital, Latur, Maharashtra, INDIA.
Email: ramdasbokil23@gmail.com

Abstract

Background: Diabetic ketoacidosis is an acute metabolic complication of diabetes characterized by the triad of hyperglycemia, acidosis, and ketosis that take place in the presence of very low levels of effective insulin action. **Aims and Objectives:** To Study Clinical profile and factors associated with Diabetic Ketoacidosis at tertiary health care center. **Methodology:** This was a cross-sectional study in the patients who were admitted to the tertiary health care center with diabetes keto acidosis during the one-year period i.e. March 2015 to March 2016, all detailed history of the patients .The data is presented in the tabular form expressed in tabular form. **Results:** the majority of the patients were in the age group of 30-45 i.e. 38.78 followed by 45-60 i.e. 24.49%, >60 -22.45%, 15-30 -14.29% respectively. Majority of the patients were Female i.e. 59.18%, Followed by Male i.e. 40.82 %. The most common clinical features were Nausea and Vomiting i.e. 90.00%, Excess Urination -65.00%, Abdominal pain in 59.00%, Breathing difficulty -55.00%, Tachycardia in 54.50 %, Altered consciousness in 49.23%. Most common associated factors like Patients discontinued insulin in 45%, followed by HbA1C > 9 were 39%, H/o infection were 35%, Low BMI in 29%, H/o Psychological stress in 15%, and H/o Delayed or improper management of diabetes in 13%. Conclusion: It can be concluded from our study that The most common clinical features were Nausea and Vomiting , Excess Urination , Abdominal pain in , Breathing difficulty, Tachycardia etc. and the most common associated factors were Patients discontinued insulin followed by HbA1C > 9, H/o infection, Low BMI, H/o Psychological stress , H/o Delayed or improper management of diabetes etc.

Key Word: Diabetic Ketoacidosis (DKA), Clinical features of DKA, Risk factors of DKA.

Address for Correspondence:
Dr. Ramdas Bokil, Associate Professor, Department of Medicine, MIMSR Medical college and YCR Hospital, Latur, Maharashtra, INDIA.
Email: ramdasbokil23@gmail.com
Received Date: 16/06/2017 Revised Date: 18/07/2017 Accepted Date: 30/08/2017
DOI: https://doi.org/10.26611/1021334

Access this article online	
Quick Response Code:	Website: www.medpulse.in
	Accessed Date: 10 September 2017

INTRODUCTION

Diabetic ketoacidosis is an acute metabolic complication of diabetes characterized by the triad of hyperglycemia, acidosis, and ketosis that take place in the presence of very low levels of effective insulin action.[1] In some cases, DKA may be the first indication of previously undiagnosed diabetes, but it may often occur in those who already have diabetes as a result of a variety of causes, such as poor compliance with insulin therapy,2,3 Further, studies stated that infection is the important precipitating cause for DKA worldwide, occurring in 30-50% of cases. Vomiting, dehydration, confusion, deep gasping breathing, and occasionally coma are typical symptoms of DKA. Many studies reported that DKA is the leading cause of mortality in children with T1DM, and is associated with increased morbidity and health care expenditure.[4,5] Longitudinal studies also indicate that 20% of pediatric patients account for 80% of all admissions for DKA, and the incidence of DKA peaks during the adolescent period[6]. Research shows that recurrent diabetic ketoacidosis (RDKA) rates are dependent on medical services and socioeconomic circumstances of the adolescents[7]. Effective treatment of DKA requires frequent monitoring of patients,

How to cite this article: Ramdas Bokil. A study of clinical profile and factors associated with diabetic ketoacidosis at tertiary health care center. *MedPulse International Journal of Medicine.* September 2017; 3(3): 77-79. https://www.medpulse.in/Medicine/

replacement of electrolyte losses, modification of hypovolemia and hyperglycemia, and careful search for the precipitating cause. As most DKA cases occur in patients with a known history of diabetes, this acute metabolic complication can be preventable by the education of patients, healthcare professionals, and the general public and frequent self measured blood glucose.[8,9]

METHODOLOGY

This was a cross-sectional study in the patients who were admitted to the tertiary health care center with diabetes keto acidosis during the one-year period i.e. March 2015 to March 2016, all detailed history of the patients like age, sex, compliance of treatment, various clinical features , HbA1 status, Body Mass Index, H/o infections were considered if there is fever and documented evidence on Peripheral smear and other any specific clinical sign or evidence other investigations like Chest X-ray, USG etc. also H/o Psychological stress , H/o management of diabetes was noted, the immune compromised patients were excluded from study. The data is presented in the tabular form expressed in tabular form.

RESULT

Table 1: Distribution of the patients as per the age

Age	No.	Percentage (%)
15-30	7	14.29
30-45	19	38.78
45-60	12	24.49
>60	11	22.45
Total	49	100.00

From above table it is clear that the majority of the patients were in the age group of 30-45 i.e. 38.78 followed by 45-60 i.e. 24.49%, >60 -22.45%, 15-30 - 14.29% respectively.

Table 2: Distribution of the patients as per the sex

Sex	No.	Percentage (%)
Female	29	59.18
Male	20	40.82
Total	49	100.00

The majority of the patients were Female i.e.59.18 %, Followed by Male i.e. 40.82 %.

Table 3: Distribution of the patients as per the clinical features

Clinical features	No.	Percentage (%)
Nausea and Vomiting	44	90.00
Excess Urination	32	65.00
Abdominal pain	29	59.00
Breathing difficulty	27	55.00
Tachycardia	27	54.50
Altered consciousness	24	49.23

The most common clinical features were Nausea and Vomiting i.e. 90.00%, Excess Urination -65.00%, Abdominal pain in 59.00%, Breathing difficulty -55.00%, Tachycardia in 54.50 %, Altered consciousness in 49.23%.

Table 4: Distribution of the patients as per the associated factors

Associated factors	No.	Percentage (%)
Patients discontinued insulin	22	45
HbA1C > 9	19	39
H/o infection	17	35
Low BMI	14	29
H/o Psychological stress	7	15
H/o Delayed or improper management of diabetes	6	13

The majority of the patients were associated with like Patients discontinued insulin in45%, followed by HbA1C > 9 were 39%, H/o infection were 35%, Low BMI in 29%, H/o Psychological stress in 15%, and H/o Delayed or improper management of diabetes in 13%.

DISCUSSION

DKA usually presents with symptoms like nausea, vomiting, pain abdomen. They may also have increased thirst and polyuria. On examination usually a fruity odour can be smelled and the breathing is typical of DKA, rapid shallow kussmaul breathing. Severe cases may present with hypotension, altered sensorium. Features of the precipitating cause may also be present. A study was done by Munro et al., who noticed the frequency of nausea and vomiting (86%), pain abdomen (27%), polyuria/polydipsia in 24% of patients10. Umpierrez et al., did a study and found abdominal pain in 46% of patients with DKA 11. Adhikari et al. noticed vomiting and abdominal pain in 34.9% of patients, altered sensorium in 47%, kussmaul breathing in 28% and hypotension in 46% of patients with DKA12. In our study we have found that the majority of the patients were in the age group of 30-45 i.e. 38.78 followed by 45-60 i.e. 24.49%, >60 -22.45%, 15-30-14.29% respectively. Majority of the patients were Female i.e. 59.18 %, Followed by Male i.e. 40.82 %. The most common clinical features were Nausea and Vomiting i.e. 90.00%, Excess Urination -65.00%, Abdominal pain in 59.00%, Breathing difficulty -55.00%, Tachycardia in 54.50%, Altered consciousness in 49.23%. These findings are similar to Pankaj Seth et al 13 they found Nausea and vomiting were the most common symptoms (63.33%), followed by pain abdomen (43.33%). One third (33.33%) of patients were dehydrated. Altered sensorium was seen in 30% of patients. 26.66% of patients were complaining of polyuria and polydipsia. Only 16.66% of patients had kussmaul breathing and 13.33% had hypotension. Symptoms related to precipitating cause were present in

60% of patients. Also the most common associated factors like Patients discontinued insulin in 45%, followed by HbA1C > 9 were 39%, H/o infection were 35%, Low BMI in 29%, H/o Psychological stress in 15%, and H/o Delayed or improper management of diabetes in 13%. These findings are similar to Pankaj Seth *et al*[13] and BJ Welch[14] precipitating factor like patients who were non-compliant to treatment also had infection and associated stressful situations like acute myocardial infarction, cerebrovascular accident, postoperative stress etc.

CONCLUSION

It can be concluded from our study that The most common clinical features were Nausea and Vomiting ,Excess Urination ,Abdominal pain in , Breathing difficulty, Tachycardia etc. and the most common associated factors were Patients discontinued insulin followed by HbA1C >9, H/o infection, Low BMI, H/o Psychological stress , H/o Delayed or improper management of diabetes etc.

REFERENCES

1. Savoldelli RD, Farhat SC, Manna TD. Alternative management of diabetic ketoacidosis in a Brazilian pediatric emergency department. DiabetolMetabSyndr. 2010; 2:41.
2. Dunger DB, Sperling MA, Acerini CL, Bohn DJ, Daneman D, Danne TP, et al. European Society for Paediatric Endocrinology/Lawson Wilkins Pediatric Endocrine Society consensus statement on diabetic ketoacidosis in children and adolescents. Pediatrics 2004; 113: e133–e140.
3. Kitabchi AE, Umpierrez GE, Miles JM, Fisher JN. Hyperglycemic crises in adult patients with diabetes. Diabetes Care. 2009; 32:1335–1343.
4. Bowden SA, Duck MM, Hoffman RP. Young children (<5 yr) and adolescents (>12 yr) with type 1 diabetes mellitus have low rate of partial remission: diabetic ketoacidosis is an important risk factor. Pediatrics Diabetes. 2008; 9(3 Pt 1):197–201.
5. Gosmanov AR, Gosmanova EO, Dillard-Cannon E. Management of adult diabetic ketoacidosis. Diabetes MetabSyndrObes. 2014; 7: 255–264.
6. Skinner TC. Recurrent diabetic ketoacidosis: causes, prevention and management. Horm Res. 2002; 57(Suppl 1):78–80.
7. Rosenbloom AL. The management of diabetic ketoacidosis in children. Diabetes Ther. 2010; 1: 103–120.
8. Anthanont P, Khawcharoenporn T, Tharavanij T. Incidences and outcomes of hyperglycemic crises: a 5-year study in a tertiary care center in Thailand. J Med Assoc That. 2012; 95: 995–1002.
9. Majaliwa ES, Mohn A, Chiavaroli V, Ramaiya K, Swai AB, Chiarelli F. Management of diabetic ketoacidosis in children and adolescents in sub-Saharan Africa: a review. East Afr Med J. 2010;87: 167–173.
10. JF Munro, IW Campbell, AC Mc Cuish, LJ Duncan. Euglycaemic diabetic ketoacidosis. Br Med J. 1973; 2: 578–80.
11. G Umpierrez, AX Freire. Abdominal pain in patients with hyperglycaemic crises. J Crit Care. 2002; 17: 63–67.
12. PM Adhikari, N Mohammed, P Pereira. Changing profile of diabetic ketosis. J Indian Med Assoc. 1997; 95(10):540–42.
13. Pankaj Seth, Harpreet Kaur, and Maneet Kaur. Clinical Profile of Diabetic Ketoacidosis: A Prospective Study in a Tertiary Care Hospital.J ClinDiagn Res. 2015 Jun; 9(6): OC01–OC04.Published online 2015 Jun 1. doi: 10.7860/JCDR/2015/8586.5995
14. BJ Welch, I Zib. Case Study: Diabetes Ketoacidosis in Type 2 Diabetes: "Look Under the Sheets" Clinical Diabetes. 2004; 22(4):198–200.

Source of Support: None Declared
Conflict of Interest: None Declared