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A DESCRIPTIVE CROSS-SECTIONAL RESEARCH TO ASSESS THE INVOLVEMENT OF BIOCHEMICAL PROFILE & CLINICAL MANIFESTATIONS IN DIABETIC KETOACIDOSIS

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Abstract:

Objectives: *We aimed to assess the biochemical and clinical characteristics and profile in the patients of diabetic ketoacidosis*

Material and methods: *We completed this cross-sectional research at Mayo Hospital, Lahore in the timeframe of February to October 2017 on a total of fifty diabetic ketoacidosis patients who met the inclusion guidelines of this particular research. We completed biochemical profile and clinical features comparison in each patient diagnosed with diabetic ketoacidosis.*

Results: *In the total research sample of fifty hospitalized diabetic ketoacidosis patients Type I & II Diabetic cases were respectively 42 patients (84%) and 8 patients (16%). An average age at diagnosis was (42.9 ± 12.9) years among fifty patients with a repeated incidence of infection, other factors and irregular treatment with respective proportions of 56%, 28% and 16%. Among various clinical features, the most repeated features included vomiting, acidotic breathing, abdominal pain and dehydration at the presentation. No significant variation in biochemical profile and clinical features was existing in Type I & II diabetes patients.*

Conclusion: *Most repeated contributing factors included insulin omission, infection or an irregular disease management by the patients; whereas, among various repeated clinical features we observed vomiting, dehydration, abdominal pain, tachycardia and acidotic breathing. We further conclude, no significant variation in biochemical profile and clinical features was existing in Type I & II diabetes patients.*

Keywords: *Biochemical Profile, Clinical Features, Diabetic Ketoacidosis (DKA), Precipitating Factors, Type I & II Diabetes Mellitus and Mortality Predictors.*

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INTRODUCTION:

The world faces the incidence of Diabetic ketoacidosis (DKA) as a most repeated emergency which is a threat to the life of the patients and the burden on the healthcare department. A variety of presentation is available in such patients which outlines the manifestations like ketoacidosis, ketosis, coma1 and ketoacidosis pre-coma; whereas, it is also possible that these manifestations are combined with various illnesses clinical profile. Still, it is much common in both Type I & II diabetes patients especially in certain states which include related co-morbid illnesses and infections [2]. An early detection and disease management of comorbidities and ketoacidosis show improvements in the extent of illness history variations and development of changes. Therefore, it is surely interesting to peep into the current perspective of Diabetic Keto Acidosis clinical profiles and hospitalized patients' illness duration.

In a number of patients diagnosed with diabetic ketoacidosis (DKA), the treatment of diabetes is common with other repeated factors of insulin omission and development of sepsis (infections) [3]. Among major and common complaints there are complaints of nausea, polyuria, vomiting and polydipsia; whereas, among various major clinical outcomes dehydration, confusion, acidotic respiration or coma are very much common [4]. Neurological status of these cases also associates with significant pH, random blood glucose and osmolality [1]. Mortality parameters primarily are diabetic ketoacidosis duration before hospitalization, acidosis severity and severe state of peripheral vascular insufficiency with other associated comorbid conditions [3]. Ketoacidosis is venous pH level under (7.3) or a contraction of serum bicarbonate below (15 mmol/L), the concentration of serum glucose above (200 mg/dL) in combination with glucosuria, ketonemia and ketonuria.

Therefore, we aimed to assess the biochemical and clinical characteristics and profile in the patients of diabetic ketoacidosis.

MATERIAL AND METHODS:

We completed this cross-sectional research at Mayo Hospital, Lahore in the timeframe of February to October 2017 on a total of fifty diabetic ketoacidosis patients who met the inclusion guidelines of this particular research. We completed biochemical profile and clinical features comparison in each patient diagnosed with diabetic ketoacidosis. We included all cases of un-controlled T2DM, DM with (HBA1c above 8), both male and female participants, age bracket (35 – 65 years) and BMI range (18.5 – 40); whereas, we did not include any patient having Random Glucose Plasma (above 600 mg/dL), Serum Osmolality (Above 310 mosm/kg), stroke, uremic encephalopathy and hepatic patients.

We secured an ethical approval from the ethical board of the institution and also collected informed and written consent of the research participants in order to meet the research formalities and protocols. We documented diabetes family history and collected five millilitres random sample for clinical assessment of every patient for the validation of clinical profile such as glucose, Serum bicarbonate and blood pH. Laboratory staff also drained the patients for fasting urine samples for ketones. Research documented information about gender and age on a pre-designed Proforma and further analyzed the outcomes on SPSS software in order to represent categorical and numerical data.

RESULTS:

In the total research sample of fifty hospitalized diabetic ketoacidosis patients Type I & II Diabetic cases were respectively 42 patients (84%) and 8 patients (16%) (Table – I). An average age at diagnosis was (42.9 ± 12.9) years among fifty patients with a repeated incidence of infection, other factors and irregular treatment with respective proportions of 56%, 28% and 16%. Among various clinical features, the most repeated features included vomiting, acidotic breathing, abdominal pain and dehydration at the presentation. No significant variation in biochemical profile and clinical features was existing in Type I & II diabetes patients.

Detailed analysis of Type I & II Diabetes Mellitus, Age distribution, Gender Distribution, Associated Infections and Diabetes Duration is as under (Table – I, II and III).

Table – I:

Gender / DM		Number	Percentage
Diabetes Mellitus Type	Type - I	8	16
	Type - II	42	84
Gender Distribution	Male	25	50
	Female	25	50

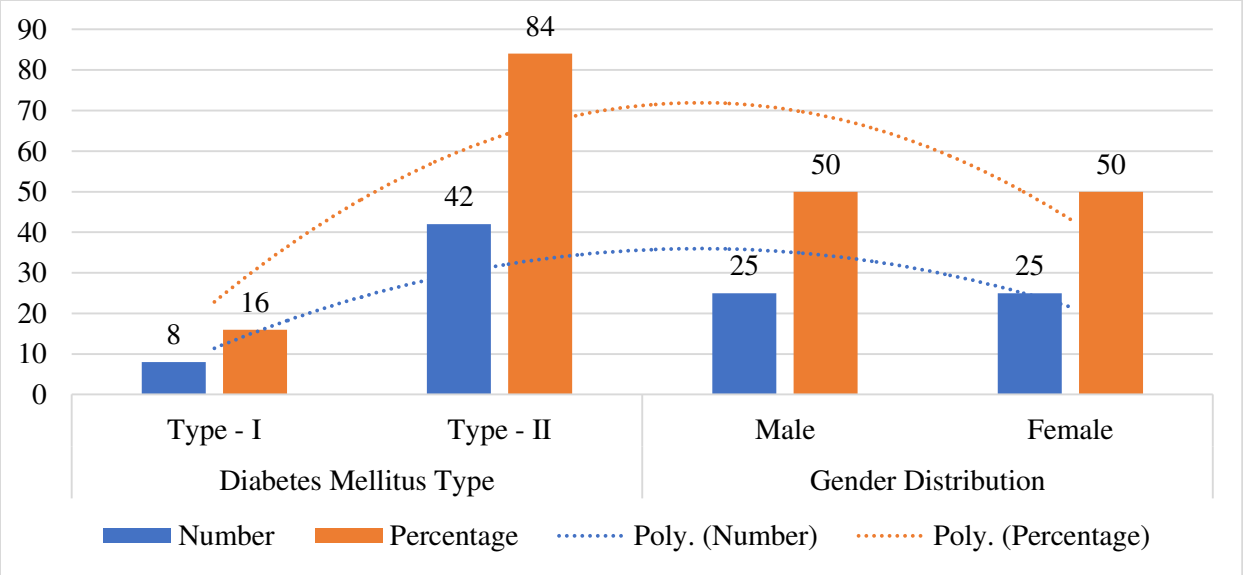


Table – II: Age and Diabetes Mellitus (DM) Duration Stratification

Age / Diabetes Duration		Number	Percentage
Age	**11 to 20**	6	12
	21 to 30	2	4
	31 to 40	10	20
	41 to 50	20	40
	51 to 60	9	18
	61 to 70	3	6
	Total	50	100
Diabetes Duration (Years)	**0 to 1**	9	18
	2 to 5	16	32
	6 to 10	15	30
	Above 10	10	20
	Total	50	100

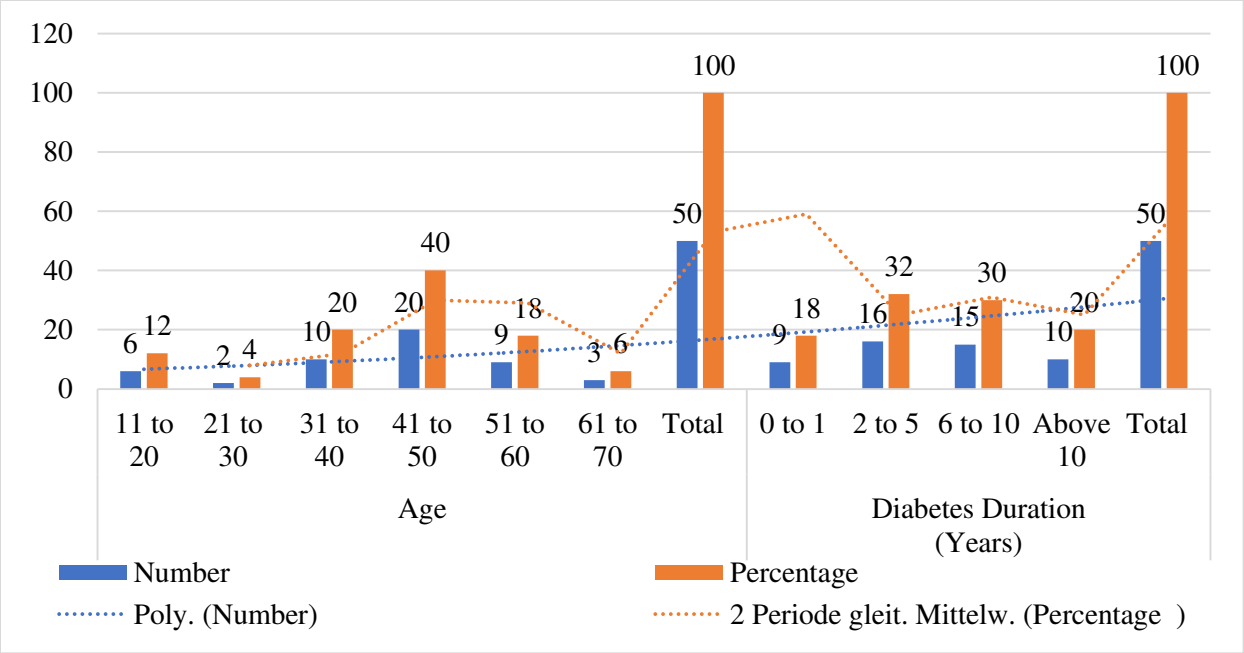
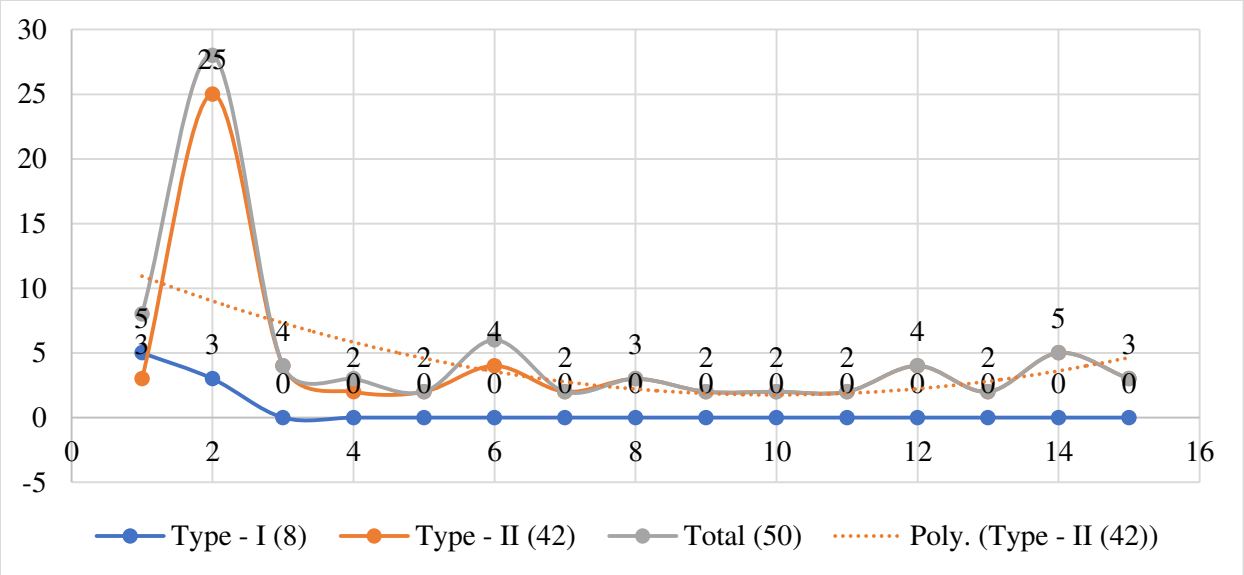


Table – III: Various Participating Factors

Participating Factors		Type - I (8)	Type - II (42)	Total (50)
Treatment	**Irregular**	5	3	8
Infection	**UTI**	3	25	28
	Acute Gastroenteritis	0	4	4
	Diabetic Foot	0	2	3
	RTI	0	2	2
	Perianal Abscess	0	4	6
	Enteric Fever	0	2	2
	CNS Infection	0	3	3
	Septic Shock	0	2	2
	Acute Cholecystitis	0	2	2
	Chronic Pancreatitis	0	2	2
Others	**Cerebrovascular Accident**	0	4	4
	Head Injury	0	2	2
	Surgery	0	5	5
	IHD	0	3	3



DISCUSSION:

In the age bracket of (35 – 65) years, minimum and maximum age were fourteen and sixty-nine years with a mean age factor of (42.9 ± 12.9) years. Another author reported mean age as thirty-six years in the age bracket of (6 – 80) years [5]. Various authors have different and contradictory reports about the age limit and average age factor among hospitalized patients of diabetic ketoacidosis; whereas, mostly forty to fifty years of age was an area of concern for the researchers [6].

We enrolled one male patient against one female patient with a ratio of (1 : 1). An author also proposed the dominance of the female population over female population in gender comparison [5]. Similar female dominance is also visible in various research studies [7].

Our patients had a varied diabetes duration which varied from six months as a lower limit to seventeen years as the upper limit; whereas, only nine diabetic ketoacidoses were in the first year (18%). Majority of patients (16) were in the category of two to five years of age which consists of thirty-two percent of the total research population. Another research reported diabetes duration in various age groups of one year, one to five years, six to ten years and above ten years with respective proportions of 2.2%, 2.8%, 2.9% and 4.3% [8].

A most repeated factors was an infection in this cross-sectional trial with a proportion of fifty-six percent. Amongst various infections, the most common infection is respiratory tract infection followed by UTI (Urinary Tract Infection) having respective proportions of twelve percent and eight percent. Various other studies also reported CVA, irregular disease management and insulin omission as diabetic ketoacidosis development factors [9]. Another author reported forty-one percent incidence of infection as a leading cause of disease [10]. Treatment non-compliance, new diagnosis and infection were 63.7%, 5.8% and 30.5% respectively contributing factors in the overall disease onset [11].

We reported abdominal pain and vomiting as most repeated risk factors which respectively contributed fifty percent and seventy-four percent. Most repeated signs included dehydration and acidotic breathing respectively as eighty-two percent and eighty percent in the total population. Fifty percent patients complained about the onset of abdominal pain; whereas, altered sensorium cases were thirty percent. One author mentioned polyuria, polydipsia, polyphagia, nausea, abdominal pain and vomiting as clinical manifestations with respective proportions of 75.2%, 74.4%, 33%, 83.4%, 51% and 78.5% [12]. In another research predominant, clinical features were polyuria, abdominal pain, polydipsia and vomiting [12].

CONCLUSION:

Most repeated contributing factors included insulin omission, infection or an irregular disease management by the patients; whereas, among various repeated clinical features we observed vomiting, dehydration, abdominal pain, tachycardia and acidotic breathing. We further conclude, no significant variation in biochemical profile and clinical features was existing in Type I & II diabetes patients.

REFERENCES:

1. Holler JW. Potassium deficiency occurring during the treatment of diabetic acidosis. JAMA 1946; 131: 1186-9.
2. Patel JC, Dhirawani MK, Kapekar SG. Analysis of 5481 subjects of diabetes mellitus. Diabetes in Tropics; 94-99.
3. Abbas E, Kitabchi, Guillermo E, Umpierre Z, et al. Hyperglycemic crises in patients with diabetes mellitus. Diabetes Care 2002;25(Suppl. 1).
4. Gomezdiaz, Rivera MR, Ramos RR, Reza AA, et al. Diabetic ketoacidosis in adults: Clinical and laboratory features. Arch Med Res 1996; 27(2):177-81.
5. Stamatis P, Efstathiou, Aphrodite G, Tsioulos, Loannis et al. A mortality prediction model in diabetic ketoacidosis. Clin Endocrinol 2002; 57:595601.
6. Jean Louis Chaisson, Nahla AJ, Raphael B, Sylvie B, et al. Diagnosis and treatment of diabetic ketoacidosis and hyperglycemic hyperosmolar state. CMAJ 2003; 168(7):859-66.
7. Jennifer W and Martin JA. Diabetic ketoacidosis and hyperosmolar hyperglycemic state. Joslin's Diabetes Mellitus. 14th Ed.
8. Akhtar J, Jabbar A, Islam N, Khan MA. Prevalence and clinical profile in diabetic ketoacidosis. J Pak Med Assoc 1993 Jul;43(7):137-9.
9. V. Seshiah. Acute complications of diabetic mellitus. API Text Book of Medicine. 7thEdition, 2003.
10. Matoo VK, Nalini K, Dash RJ, et al. Diabetic ketoacidosis – A clinical study. JAPI 1991May; 39(5):379-81.
11. Rajsoorya C, Wong SF, Chew LS. Clinical and biochemical profile in diabetic ketoacidosis. Singapore Med J 1993 Oct;34(5):381-4.
12. Louis Vignati. Coma in Diabetes. Cader Asmac Joslin's Diabetes Mellitus. 12th Ed. Lea and Febiger, 526-552.