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Gender wise comparison of diabetic ketoacidosis presentation at the time of diagnosis in patients with insulin dependent diabetic mellitus, An observational based study

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ABSTRACT

Observational based study using data obtained from type 1 diabetic participant: Studies meeting the inclusion criteria were examined, and study demographics (age, sex, and type of diabetes) information and assessment method, prevalence, and mean scale scores were recorded using a structured form based on the case report form.

Keyword- Diabetic ketoacidosis, Type 1 Diabetes, Type 2 Diabetes

INTRODUCTION

DIABETES

Diabetes mellitus is a group of metabolic diseases characterized by elevated blood glucose levels (hyperglycemia) resulting from defects in insulin secretion, insulin action or both. Insulin is a hormone manufactured by the beta cells of the pancreas, which is required to utilize glucose from digested food as an energy source.¹⁻²

TYPES OF DIABETES

Type 1 Diabetes

- Caused by the immune destruction of the beta cells of the pancreas.
 - Antibodies to islet cells and insulin are present at diagnosis.
 - Insulin secretion gradually diminishes.
 - May present at any age, but most common in childhood and adolescence.
 - Insulin by injection is necessary for survival.
- Contributing factors
- Genetic predisposition
 - Environmental triggers (infection or other stress)³

Type 2 Diabetes

- Caused by insulin resistance in the liver and skeletal muscle, increased glucose production in the liver, over production of free fatty acids by fat cells and relative insulin deficiency.
 - Insulin secretion decreases with gradual beta cell failure.
 - Reductions in blood glucose levels often can be achieved with changes in food intake and physical activity patterns. Oral medication and/or insulin injections are eventually required.
- Contributing factors:
- Obesity
 - Age (onset of puberty is associated with increased insulin resistance)
 - Lack of physical activity
 - Genetic predisposition
 - Conditions associated with insulin resistance, (e.g., polycystic ovary syndrome)⁴⁻⁶

DIABETIC KETOACIDOSIS

Diabetic ketoacidosis is a life-threatening disorder that is due to decreased effective circulating insulin concentration, in association with insulin resistance and increased production of counter-regulatory hormones such as glucagon, catecholamines, cortisol and growth hormone. The hormonal changes cause:⁷

- Increased hepatic and renal glucose production and impaired peripheral glucose utilisation, leading to hyperglycaemia and hyperosmolality.
- Increased lipolysis and unrestrained production of ketoacids (betahydroxybutyrate and acetoacetate), resulting in ketonaemia and eventual metabolic acidosis.
- Hyperglycaemia leads to osmotic diuresis, loss of electrolytes and dehydration, which can exacerbate the metabolic acidosis.⁸

The biochemical criteria for the diagnosis of diabetic ketoacidosis include:

- Hyperglycaemia, defined by a blood glucose (BG) level >11 mmol/L.
- Venous pH <7.3
- Bicarbonate <15 mmol/L

Diabetic ketoacidosis is usually associated with at least 5% dehydration, vomiting, hyperventilation and/or drowsiness. Factors associated with diabetic ketoacidosis in children with newly diagnosed type 1 diabetes include younger age (those aged less than five years are at greatest risk), children without a first degree relative with type 1 diabetes and those from families of lower socioeconomic status. High dose glucocorticoids, antipsychotics, diazoxide and immunosuppressive drugs have been reported to precipitate diabetic ketoacidosis in individuals not previously diagnosed with type 1 diabetes. Diabetic ketoacidosis has been reported in at least 25% of children with newly diagnosed type 2 diabetes.⁹

The risk of diabetic ketoacidosis in established type 1 diabetes is increased in children and young people with poor metabolic control or previous episodes of diabetic ketoacidosis. The most common precipitating factors in the development of diabetic ketoacidosis include infection, often as a result of inadequate insulin therapy during intercurrent illness and insulin omission. Adolescent girls, children with psychiatric disorders, such as eating disorders, and those from families of lower socio-economic status are also at increased risk. Diabetic ketoacidosis is rare in children whose insulin is administered by a responsible adult. Furthermore, after medical and educational interventions, metabolic control improved and diabetic ketoacidosis decreased.¹⁰⁻¹¹

5.1 Management of DKA

1. Insulin
2. Intravenous fluid
3. Kcl
4. Sodium bicarbonate
5. Phosphate
6. Antibiotics¹²⁻¹⁴

METHOD

Search strategy- We conducted literature searches using PubMed/MEDLINE. The search was limited to studies published before 18 Jun 2015, “English language,” and “human subjects” and combinations of the medical subject headings “Diabetes Mellitus” or “Diabetes Mellitus, Type 1,” The reference lists of previous meta-analyses and selected articles were screened.

Selection criteria Studies meeting the inclusion criteria were examined, and study demographics (age, race, sex, and type of diabetes) as well as psychological status information (assessment method, prevalence, and mean scale scores) were recorded using a structured form based on the case report form of galaxy diabetes and thyroid care centre.

To be included-

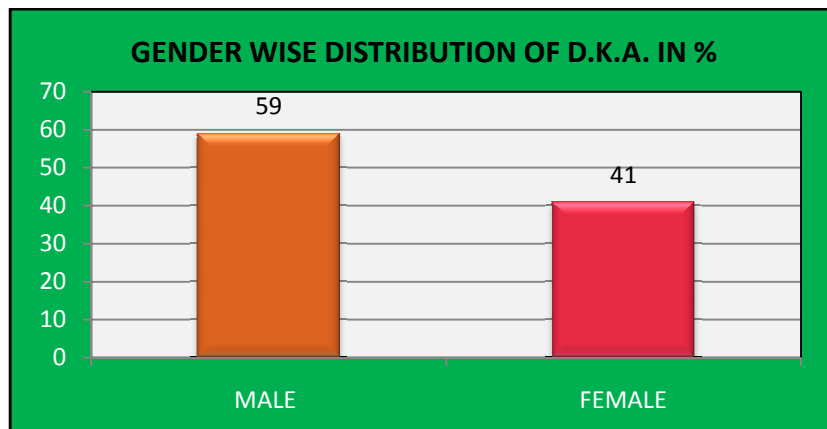
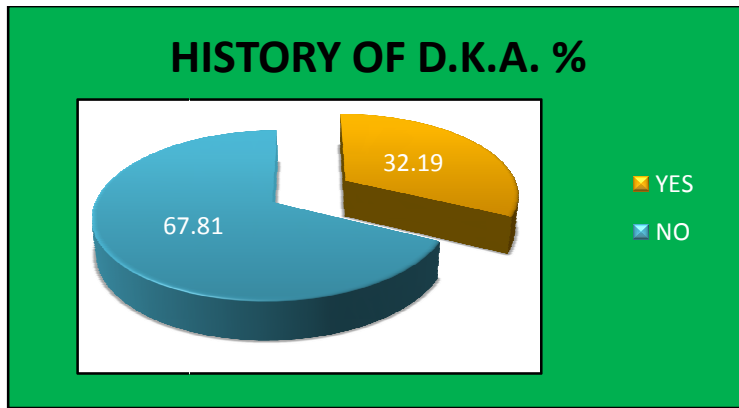
- 1) cases of type 1 diabetes
- 2) cases undergoing depression or irritate psychological status
- 3) pregnant women with type 1 diabetes were not included
- 4) In the event of multiple publications, only the most recent manuscript for a particular study population was included.

Made a Percentage wise calculation of all 205 patients and put all available patients in two different category based on the presence of DKA situation at the time of their diagnosis. Later two new categories according to the gender of patients who fall in DKA situation are established.

For the purposes of this review, the term *controlled* does not imply that the condition under study was randomly manipulated or followed longitudinally. A study was considered uncontrolled if it did not have a nondiabetic comparison group.

RESULT

Appropriate data required for this study were collected from total 205 participants in which 32.19% participant were found in DKA while 67.8% patient were not in DKA complication situation. In total 32.19% patients which were in DKA situation at the time of their diagnosis, 59% were male and remaining 41% were female patients. Samples were gender wise categorized in two different pools according to presence of DKA.



Discussion

In our study Out of 205 patients 32.19% were found in DKA complication at the time of diagnosis while 67.8% patient was not in DKA complication.

In total 32.19% patients which were in DKA situation at the time of their diagnosis, 59% were male and remaining 41% were female patients.

Conclusion

Number of male patients found in DKA situation was higher than that of female patients.

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