DIABETIC KETOACIDOSIS PRECIPITATING FACTORS, MORBIDITY AND MORTALITY IN CHILDREN AND ADOLESCENTS WITH TYPE1 DIABETES MELLITUS

Thesis
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بسم الله الرحمن الرحيم

(ربنا آتنا من لدنك رحمة وهيىء لنا من أمرنا رشدا)

صدق الله العظيم

ABSTRACT

Diabetic ketoacidosis (DKA) is an acute, major, life-threatening complication of diabetes. In this study sixty patients were included; history, clinical examination and laboratory investigations were performed, diabetic ketoacidosis is the most serious acute complication of type 1 diabetes. In ***DEMPU*** 38.7% are new and 61.3% are known cases, majority are severe but degree of acidosis is more intense in the newly diagnosed cases. Risk factors precipitating DKA are most importantly delayed diagnosis in newly diagnosed cases and insulin omission with infection in old cases.

Because treatment is costly and because the risk for morbidity remains even under the best circumstances, therefore, a major goal of clinical teams is to prevent ketoacidosis by early diagnosis of diabetes in new patients, and by appropriate treatment of intercurrent disease in patients with known diabetes, combined with family involvement and psychological interventions, as necessary. This can be achieved by increasing awareness of public and health professionals for timely recognition and diagnosis of diabetes, as well as continuous education and motivation targeting factors that precipitate ketosis, most importantly issues related to the availability and the proper use of insulin.

Also we conclude that the protocol applied in this study had been found easy, safe and efficient. More ever, the insulin regimen was effective to correct hyperglycemia, inhibit lipolysis and ketogenesis.

Key words : Chest X- ray - Fructose- 6- phosphate .

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List of abbreviations

Aao_2	Alveolar to arteriolar oxygen
ACE	Angiotensin converting enzyme
ADA	American Diabetes Association
BE	Brain Edema
BMI	Body mass index
CNS	Central Nervous System
CPT	Carnitine Palmityle – Transferase
CRP	C- reactive protein
CSII	Continuous subcutaneous insulin infusion
CT	Computerized tomography
CXR	Chest X- ray
DCL	Disturbed conscious level
DKA	Diabetic ketoacidosis
DM	Diabetes mellitus
DN	Diabetic nephropathy
DR	Diabetic retinopathy
ECG	Electrocardiogram
ESRD	End stage renal disease
F-6-P	Fructose- 6- phosphate

FFA	Free fatty acid
GAD	Glutamic acid decarboxylase
GDM	Gestational diabetes mellitus
GFR	Glomerular filtration rate
G-6-P	Glucose-6- phosphate
HHNS	Hyperosmolar hyperglycemic nonketotic coma
HK	Hexokinase
HLA	Human leukocyte antigen
HMP	Hexose monophosphate
ICU	Intensive care unite
K	Potassium
MRI	Magnetic resonant image
MSU	Mid - stream urine.
Na	Sodium
NGT	Normal glucose tolerance
PC	Pyruvate carboxylase
PEP	Phosphoenol pyruvate
PEPCK	Phosphoenol pyruvate carboxykinase
PFK	Phosphofructokinase
PK	Pyruvate kinase
β- OHB	Beta-hydroxybutyrate

T I DM	Type I diabetes mellitus
T2DM	Type 2 diabetes mellitus
TCA	Tricarboxylic acid
TG	Triglycerides
WBC	White blood cell
μalb	micro albuminuria

Introduction and aim of work

Diabetic ketoacidosis (DKA) is a potentially life threatening complication in patients with diabetes mellitus. It occurs predominantly in those with type 1 diabetes, but can also occur in those with type 2 diabetes under certain circumstances. DKA results from shortage of insulin, in response the body switches to burning fatty acids and produces acidic ketone bodies that cause most of symptoms and complications ***(Kitabchi et al., 2008).***

In children who have established diabetes, DKA occurs at a rate of approximately 1% to 8% per year ***(Glaser., 2005)***. There is often a particular underlying problem that has led to the DKA episode. This may be inter current illness (pneumonia, influenza, gastroenteritis and urinary tract infection), or inadequate insulin administration. Young patients with recurrent episodes of DKA may have an underlying eating disorder, or may be using insufficient insulin for fear that it will cause weight gain ***(Rewers et al., 2002).*** In 5% of cases, no cause for the DKA episode is found ***(Kitabchi et al., 2008).***

Awareness of presenting symptoms and signs by the primary care providers as well as by the emergency room personnel help minimize the severity of DKA with earlier diagnosis and focus on appropriate physiologic treatment and ongoing monitoring to minimize potential lethal complications ***(Chiarelli et al., 2005).***

The potential complications of DKA include cerebral edema, hypokalemia, hypophosphatemia, hypoglycemia, intracerebral and peripheral venous thrombosis, mucormycosis, rhabdomyolysis, acute pancreatitis, acute renal failure (ARF) and sepsis. The reported mortality rate from DKA in children is 0.15-0.30%, and cerebral edema accounts for