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Hyperglycemic crisis and homoeopathy

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Abstract

Hyperglycemia is originally a Greek word meaning hyper + glykys + haima meaning high glucose level in blood. It is condition where serum glucose level is > 125 mg/dL empty stomach and > 180 mg/dL 2 hours after eating. It can be initial sign of diabetes mellitus or its complication, or even the complication of any other disease. Hyperglycemic crisis is of two types:

1. Diabetic Ketoacidosis (DKA).
2. Hyperosmolar hyperglycemic state (HSS).

Homeopathic management of Hyperglycemia is based on individualization or constitutional and therapeutic approaches for rehabilitation and restoration of the patient with Hyperglycemia.

Keywords: Hyperglycemia, homoeopathy and rehabilitation

Introduction

Hyperglycemia is condition where serum glucose level is > 125 mg/dL empty stomach and > 180 mg/dL in 2 hours after eating. Hyperglycemic crisis is of two types:

1. Diabetic Ketoacidosis (DKA): Seen in type 1 diabetes, where body doesn't prepare any insulin to suppress breakdown of fat, resulting in ketone bodies formation as byproduct & metabolic acidosis.
2. Hyperosmolar and hyperglycemic state (HSS): Seen in type 2 diabetes, where body still prepares some insulin but its uptake is hampered, so there is least to no ketone bodies formation.

Homeopathic management of Hyperglycemia is based on individualization or constitutional and therapeutic approaches for rehabilitation and restoration of the patient with Hyperglycemia.

Pathophysiology

Pathophysiology of Hyperglycemic crisis is explained in Figure A given below.

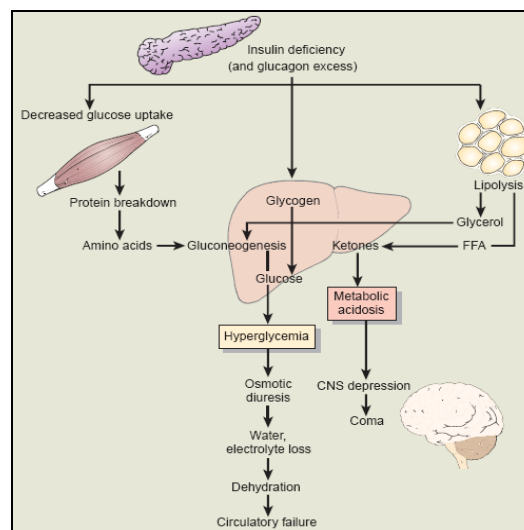


Fig A: Pathophysiology

Etiology

Endocrine

- Diabetes mellitus (types 1 and 2)

Drugs

- Corticosteroids
- Beta blockers
- Thiazide diuretics
- Niacin
- Pentamidine
- Protease inhibitors
- l-asparaginase
- Antipsychotic agents

Systemic Disease

- Cushing’s syndrome

Severe Stress

- Stroke
- Myocardial infarction

Psychogenic

- Bulimia nervosa

Physiological

- Infection
- Inflammation

Other

- Pregnancy

Types

Common clinical presentation of DKA and HHS

1. Excessive micturition
2. Excess Thirst
3. Tachycardia (Increased Heart Rate)
4. Recent history of weight loss
5. Nausea and vomiting
6. Signs of blood volume depletion \ dehydration (i.e., dry mucous membranes, decreased skin elasticity), reduced blood pressure and circulatory system collapse.
7. Neurological abnormalities like Altered mental status, Lethargy, Coma, Other neurological exam abnormalities, e.g., blurred vision and weakness

Differential features of DKA and HSS

	Diabetic Ketoacidosis (DKA)	Hyperosmolar Hyperglycemic State (HHS)
Definition/ Causation	Diabetes with ketone bodies formation and acidosis. It is the result of insulin deficit (complete in type 1 diabetes/ pancreatic lesion). Severity is graded as mild, moderate and severe.	Complication of badly managed type 2 diabetes.
Onset	Rapid over hours.	Insidious onset over days to weeks.
Clinical Features	Crampy Abdominal pain Fruity breath (from exhaled acetone) Kussmaul respirations	
Complications	Mucomycosis Cerebral inflammation/edema Irregular cardiac rhythms Cardiac Failure	Diabetic Coma If not treated - Death
Treatment	For fluid loss- Fluid resuscitation. Short-acting type IV insulin Potassium replacement Supplementation of Glucose in the case of hypoglycemia	For fluid loss- Fluid resuscitation. Type IV insulin Potassium replacement

Diagnosis

Laboratory Values in Diabetic Ketoacidosis (DKA) and Hyperglycemic Hyperosmolar State (HHS) (Representative Ranges at Presentation).

Table 1: Representative Ranges

	DKA	HHS
Glucose, ^a mmol/L(mg/dL)	13.9-33.3 (250-600)	33.3-66.6 (600-1200)
Sodium, meq/L	125-135	135-145
Potassium ^{a, b}	Normal to ↑	Normal
Magnesium ^a	Normal	Normal
Chloride ^a	Normal	Normal
Phosphate	Normal	Normal
Creatinine ^{a, b}	Slightly ↑	Moderately ↑
Osmolality (mosm/mL)	300-320	330-380
Plasma ketones ^a	++++	+/-
Serum bicarbonate, ^a meq/L	<15	Normal to slightly
Arterial pH	6.8-7.3	>7.3
Arterial Pco, ^{*a} mmHg	20-30	Normal
Anion gap ^a (Na - [Cl + HCO ³])	↑	Normal to slightly ↑

Severity of DKA can be known on the basis of Table 2

Table 2: Severity of DKA

	Arterial pH	Serum bicarbonate levels	Anion gap	Mental state
Mild	More than 7.24	15–18 mEq/L	More than 10 mEq/L	Alertness
Moderate	7.0–7.24	10–15 mEq/L	More than 12 mEq/L	Alertness or Confusion
Severe	Less than 7.0	Less than 10 mEq/L	More than 12 mEq/L	Confused

Homeopathic Therapeutics

- Abroma Augusta
- Cephalandra Indica
- Conium
- Galega Officinalis
- Natrum Phosphorica
- Phosphoric acid
- Phosphorus
- Syzgium Jambolinum

Conflict of Interest

Not available

Financial Support

Not available

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