



*Management of diabetic ketoacidosis
(DKA)*

Prof. M. Alhummayyd

Diabetic ketoacidosis

- **Acute emergency** that requires admission to hospital.
- **It develops as a result of insulin deficiency .**

Insulin deficiency

↑ glycogenolysis
↑ gluconeogenesis,
↑ protein catabolism

↑ Lipolysis

↑ Hyperglycemia

↑ Free fatty acids

Glucosuria

↑ Ketone bodies
(ACAC, β -OHBA, acetone)

Osmotic diuresis

Hyperketonemia

Dehydration

Acidosis (Fast, deep breathing,
a smell of Acetone in breath, nausea &
vomiting, stomach pains)

Diabetic ketoacidosis

Diabetic ketoacidosis

- **Hyperglycemia-induced osmotic diuresis & severe fluid loss.**
- **Fluid loss induces electrolyte imbalance**
- **Metabolic acidosis induces hyperventilation**

Characters of diabetic ketoacidosis

- **Hyperglycemia**
- **Ketogenesis (Hyperketonemia)**
- **Metabolic acidosis**
- **Glucosuria**
- **Polyuria**
- **Dehydration**
- **Electrolyte imbalance**
- **Thirst**
- **Polydipsia (increased drinking).**

Treatment of diabetic ketoacidosis

Adequate correction of :

- **Hyperglycemia** (*insulin*)
- **Dehydration** (*fluid therapy*)
- **Electrolyte imbalance esp potassium** (*potassium therapy*)
- **Ketoacidosis** (*bicarbonate therapy*)

Treatment of diabetic ketoacidosis

- **Insulin therapy(short or ultra short insulin)**

Continuous IV infusion in small doses through an infusion pump.

Treatment of diabetic ketoacidosis

- **Fluid therapy (Rehydration)**
 - Infusion of isotonic saline (0.9% sodium chloride) at a rate of 15–20 mL/kg/hr.
- **Potassium therapy**
 - potassium replacement is added to the infusion fluid to correct the serum potassium concentration.

Treatment of diabetic ketoacidosis

- **Bicarbonate therapy**
 - Only if the arterial pH < 7.0 after 1 hour of hydration, *sodium bicarbonate should be administered every 2 hr until pH is at least 7.0.*

SUMMARY

- **Hyperglycemic ketoacidosis:** treated by insulin, fluid therapy, potassium supplement and bicarbonate.
- **Hypoglycemia:** treated by oral glucose tablets, juice or honey (*if patient is conscious*) and by 20-50 ml of 50% glucose solution I.V. infusion or glucagon (1 mg S.C. or I.M.) (*if patient is unconscious*).

	Hypoglycemic coma (Excess insulin)	Hyperglycemic coma Diabetic ketoacidosis (Too little insulin)
Onset	Rapid	Slow - Over several days
Acidosis & dehydration	No	Ketoacidosis
B.P.	Normal	Subnormal or in shock
Respiration	Normal or shallow	air hunger
Skin	Pale & Sweating	Hot & dry
CNS	Tremors, mental confusion, sometimes convulsions	General depression
Blood sugar	Lower than 70 mg/100cc	Elevated above 200 mg/100cc
Ketones	Normal	Elevated