

MANAGEMENT OF DIABETIC KETOACIDOSIS

Confirm the diagnosis: History of diabetes mellitus, polyuric, polydypsia and polyphagia

Physical examination: Dehydration, coma, Kussmaul breathing, etc.

BS (glucometer), Urine test for glucose and Ketone (stick test in urine), Acidosis (VBG)

Primary evaluation: BS, Na, K, Urea, Creatinine, EKG, Serum Osmolality, and Urine specific gravity

Search for infections: Oral or Vaginal Candidiasis, Pharyngitis, Otitis, Sinusitis, Pneumonia, UTI (urinalysis, urine culture), CBC, Blood culture, ESR, CRP, CXR, etc.), and if there is fever and /or leukocytosis ($WBC > 25000$) start antibiotic.

Estimate dehydration (usually 10%), Neurological examinations, Vital signs, Intake-Output, Flow Charts, and Repeated Examinations.
(Every 2 hours recheck BS, VBG, Na, and K)

The aim is lowering BS just 70-100 mg /dL /hour not more

If acidosis is resistant to treatment consider: infection, underinsulinization or ineffective rehydration

If the patient is a known diabetic, the previous insulin dosage can be started from the second or third day of admission depending on the condition of the patient

A. First Hour

Administer 20 ml/kg Normal saline in an hour

B. From Second Hour

Fluid management

1. patient is alert
2. has no Infection
3. has no Abdominal pain
4. pH > 7.25
5. Corrected Na < 150 meq/L
6. HCO₃ > 15 mmHg

yes
No

Administer 85 mL/kg (8.5% Dehydration) + Maintenance during 23 hours

first 12 hours: Administer 1/2 Maintenance + 1/2 Deficit (+K)
next 24 hours: Administer Maintenance + 1/2 Deficit (+K)

Admit the patient in PICU specially in sever DKA and check vital sign continual and Evaluate each case separately regarding weight, state of hydration, vital osmolality, signs, blood sugar, sensorium and general response

Sodium

From 2nd hour, all fluids used should be normal saline until BS drops to less than 300 mg/dL

If BS > 300 administer N/S (Na = 150 meq/lit)
if BS < 300 Na = 50 meq/lit

Potassium

From 2nd h. all fluids should contain potassium (at least 40 mEq/L) *except in Patients with Anuria or K > 5.5 meq/L or EKG signs of Hyperkalemia*

Glucose

BS ≥ 300 → Glucose = 0 → (serum N/S)
300 > BS ≥ 200 → Glucose = 5g/dl → (serum D/W 5%)
200 > BS ≥ 100 → Glucose = 7.5g/dl → (serum D/W 7.5%)
100 > BS → Glucose = 10g/dl → (serum D/W 10%)

Change fluids to Glucose-containing one, (When BS drops to less than 300mg/dL) + Potassium (40mEq/L) + Sodium (50mEq/L)

Insulin

BS ≥ 250 → insulin 0.1 u/ kg/ hour (Base insulin)
250 > BS ≥ 200 → Base insulin × 3/4
200 > BS ≥ 150 → Base insulin × 1/2
150 > BS ≥ 100 → Base insulin × 1/4
100 > BS → STOP insulin infusion

* allowing BS to rise to safe limits (200-300 mg/dL)

C. Change to SQ insulin (Transitional Period)

When pH > 7.25 and HCO₃ > 15 mmol/L start SQ intermittent regular insulin (q4h) instead of insulin infusion

Start PO feeding when the patient is completely alert, fully hydrated and motivated (Water, Milk - then - Soup, diabetic Diet)

Check BS with Glucometer then inject SQ Insulin →

200 > BS > 100 0.1 unit/kg
300 > BS > 200 0.2 unit/kg
400 > BS > 300 0.3 unit/kg
BS > 400 0.4 unit/kg

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