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Management of DKA

Complete initial evaluation, check capillary glucose and serum/urine ketones to confirm hyperglycemia and ketonemia/ketonuria. Obtain metabolic profile. Start IV fluid 1 L of 0.9% NaCl per hour

1. Fluid therapy:

Determine hydration status:

- a. Severe hypovolemia or dehydration: administer fluid 1 L of 0.9% saline per hour. Then continue fluid therapy as below
- b. Mild hypovolemia: evaluate for corrected Na (for each 100 mg/dL glucose above 100 mg/dL, add 1.6 mmol to sodium value).
 - If Na normal or high, give 250-500 mL 0.45% saline /hr depending on hydration status.
 - If Na is low, give 250-500 mL 0.9% saline /hr depending on hydration status.
 - When serum glucose reaches to 200 mg/dL, change to 5% dextrose in 0.45% saline 150-250 mL/hr.

2. Potassium:

Establish adequate renal function (urine output about 50 ml/hr), serum K value:

- a. $K < 3.3$ mmol/L: hold insulin and give KCl 20-30 mEq/hr until $K > 3.3$ mmol/L.
- b. K between 3.3-5.2 mmol/L: give 20-30 mEq KCl in each liter IV fluid to keep normal serum K.
- c. $K > 5.2$ mmol/L: don't give K, but check every 2 hrs.

3. Insulin therapy (regular):

- IV route, give bolus 0.1 U/kg followed by insulin infusion 0.1 U/kg/hr.

- If serum glucose doesn't fall by at least 10% after one hr, give another bolus of 0.14 U/kg then continue same infusion.
- When serum glucose reaches to 200 mg/dL, reduce insulin infusion to 0.05 U/kg/hr or 0.1 U/kg SC every 2 hrs.
- Keep serum glucose between 150-200 mg/dL till resolution of the DKA.

4. Bicarbonate therapy: rarely needed

- Indicated when PH <6.9.
- 100 mmol in 400 ml H₂O + 20 mEq KCl infuse over 2 hrs.
- Repeat and monitor PH and K every 2 hrs till PH ≥7

5. Check renal function, electrolytes, venous PH, and glucose every 2-4 hrs until stable.

6. Treat the precipitating cause like infection with antibiotic.

Management of HHS

Complete initial evaluation, check capillary glucose and serum/urine ketones to confirm hyperglycemia and ketonemia/ketonuria. Obtain metabolic profile. Start IV fluid 1 L of 0.9% NaCl per hour

7. Fluid therapy:

Determine hydration status:

- a. Severe hypovolemia or dehydration: administer fluid 1 L of 0.9% saline per hour. Then continue fluid therapy as below
- b. Mild hypovolemia: evaluate for corrected Na (for each 100 mg/dL glucose above 100 mg/dL, add 1.6 mmol to sodium value).
 - If Na normal or high, give 250-500 mL 0.45% saline /hr depending on hydration status.
 - If Na is low, give 250-500 mL 0.9% saline /hr depending on hydration status.
 - When serum glucose reaches to 300 mg/dL, change to 5% dextrose in 0.45% saline 150-250 mL/hr.

8. Potassium:

Establish adequate renal function (urine output about 50 ml/hr), serum K value:

- d. $K < 3.3$ mmol/L: hold insulin and give KCl 20-30 mEq/hr until $K > 3.3$ mmol/L.
- e. K between 3.3-5.2 mmol/L: give 20-30 mEq KCl in each liter IV fluid to keep normal serum K.
- f. $K > 5.2$ mmol/L: don't give K, but check every 2 hrs.

9. Insulin therapy (regular):

- IV route, give bolus 0.1 U/kg followed by insulin infusion 0.1 U/kg/hr.

- If serum glucose doesn't fall by at least 10% after one hr, give another bolus of 0.14 U/kg then continue same infusion.
- When serum glucose reaches to 300 mg/dL, reduce insulin infusion to 0.05 U/kg/hr or 0.1 U/kg SC every 2 hrs.
- Keep serum glucose between 200-300 mg/dL till the patient is fully alert.

10. Bicarbonate therapy: not indicated

11. Check renal function, electrolytes, venous PH, and glucose every 2-4 hrs until stable.

12. Prophylactic anticoagulant:

low molecular weight heparin SC 4000 U once daily
or unfractionated heparin 5000 U SC twice daily

13. Treat the precipitating cause like infection with antibiotic.