IMET 2000 PAL

International Medical Education Trust - Palestine

Diabetic Keto-Acidosis (DKA)

Diabetic keto-acidosis (DKA)

- DKA or Hyperglycemia coma is defined when blood sugar 300- 800mg/dl
- Is primarily seen in I.D.DM - can be seen in NIDDM.
- DKA is responsible for more than 160,000 hospital admission each year.

Etiology:

- Severe insulin deficiency.
- In undiagnosed persons with I.D.D.M
- In diagnosed pt whose insulin needs increased due to: Infection, trauma, stress, surgery.
- In persons who stop the therapy

Pathophysiology

- DKA or Hyperglycemia begins by the increase in the stress hormones:
- (glucagons – G.H - cortisol and catecholamine.) as these hormones will show the effect of insulin deficiency and hyperglycemia

In DKA

- Hyperglycemia cause osmotic diuresis, low Na polyuria, and glycosuria
- High protein break down causes high potassium release and B.U.N in blood serum and this will cause more diuresis and massive ketone formation.
- Ketones are acid source: will use the alkaline reserve for buffering the blood, and also excreted in urine –high diuresis
- Diuresis (excretion of glucose – urea + ketones) will result in loss of water and electrolytes (Na, K -+phosphate)
- Low Na will prevent formation of (NAHCo3) – sodium Bicarb (the alkaline)

Pathophysiology of DKA

- When alkaline reserve is depleted, the blood Ph becomes low and thus
- Metabolic acidosis results and compensatory organs such as kidneys and lung are stimulated
- Kidney tries to excrete more acid, and this will worsen the condition causing fluid and electrolyte imbalance

Pathophysiology of DKA

- Lungs try to compensate by causing kussmauls breathing to excrete hydrogen ions as CO2, but because there is continuous formation of acid, complete compensation will not occur – causing alteration in cellular function
- So this will result in hyper osmolality, dehydration, hemoconcentrtation shock and coma.

Clinical Manifestations:

1. Ployuria and thirst from osmotic diuresis – then oliguria.
2. Nausea – vomiting + abdominal pain – from acidosis.
3. Weakness – headache and fatigue + dim vision.
4. Normal or subnormal temp"Fever – if there is infection“
5. Signs of dehydration + hyporolemic shock. (Low) B.P (high) pulse.
6. Hyperpnoea – kussmauls breathing (Deep).
7- Fruity odor to breath from respiratory elimination of acetone.
8. Wt loss – flushed face.
9. Lethargy + coma – (Acidosis and dehydration

Management:

- 1. Monitor Vital signs closely with full physical examination and history.
- 2. Monitor fluid in take and out put
- 3. Close monitoring of the patient laboratory test:
- Monitor Blood sugar, CB.C, B.U.N and creatinin and Ketones level
- Plasma sodium chloride and bicarbonate and potassium (hypokalemia may result)
- Arterial blood gas, Serum electrolytes phosphate magnesium and calcium
- Urine analysis and culture – chest X-ray

Management:

4. ECG.

5. Give IV fluids Normal Saline.

6. Give insulin therapy either IV or S.C.

7. Apply N/G tube if vomiting is severe.

Teach the child and his family about:

Causes of hyperglycemia

Effects of insulin

Importance of diet

Clinical manifestations of hyperglycemia

Pediatrics third year students

- Wishing you happy and healthy days