EmCC: Emergency and Critical Care

DKA and HHNK

UPH
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Course Objectives

- Describe the management of Diabetic Ketoacidosis (DKA)
- Describe the management of Hyperglycemic Hyperosmolar Nonketone Acidosis (HHNK/HHS)

DKA and HHNK/HHS

In your small groups, answer the following questions and **BRING TO CLASS:**

Dalam grup kecil anda, jawablah pertanyaan dibawah ini dan **BAWA KE KELAS**:

1. What are two signs and symptoms of hyperglycemia/apa dua tanda dan gejala hiperglikemia?
2. What is the treatment for/apakah penanganan untuk:
   a. Acute DKA
   b. Acute HHNK/HHS
3. What are complications for/apakah komplikasi untuk:
   a. Acute DKA
   b. Acute HHNK/HHS
4. What are two points of advice for managing diabetes when ill/apakah dua saran untuk memanajemen diabetes saat sakit?
5. What is the same with DKA and HHNK/HHS? Apakah persamaan DKA dan HHNK/HHS?
6. What is different between DKA and HHNK/HHS? Apakah perbedaan DKA dan HHNK/HHS?

HHNK/HHS

- Usually associated with Type 2 diabetes
- Abnormal increase in osmolarity
- Develops over days or weeks
- Minimal ketosis

Common signs

Box 1. Common signs and symptoms of diabetic ketoacidosis and hyperglycaemic hyperosmolar state

Diabetic ketoacidosis

- Elevated blood glucose – greater than 12mmols/litre
- Polyuria – osmotic diuresis
- Tachycardia associated with fluid loss
- Polydipsia – increased thirst
- Glucose in urine positive
- Acidosis variable – pH 7.30–7.00, depending on the severity of DKA

Hyperosmolar state

- Usually grossly elevated blood glucose – 34mmol/litre or higher (Chiasson et al, 2003)
- Polyuria – osmotic diuresis
- Tachycardia associated with fluid loss
- Polydipsia – increased thirst
- Glucose in urine positive
- Acidosis present – pH not less than 7.30

- Convert glucose values:
  - mg/dl x 0.0555 = mmol/l
  - mmol/l x 18.0182 = mg/dl
- Osmotic diuresis
  - DKA: 5-7 L
  - HHNK/HHS: 7-12 L

Differences

Box 2. Differences in diabetic ketoacidosis and hyperglycaemic hyperosmolar state

Diabetic ketoacidosis

- Serum ketones positive – acetone smell on breath
- Deep rapid respirations – Kussmau breathing
- Urine ketones positive
- Can be alert or drowsy, coma in severe case
- Increased or decreased serum sodium
- Initially increased serum potassium
- Abdominal pain typically present – related to the metabolic acidosis (Umpierrez and Freire, 2002)

Hyperosmolar state

- Serum ketones usually mild or absent
- Shallow rapid respirations
- Urine ketones negative
- Stupor/coma more likely due to hyperosmolar state. Neurological problems such as seizures or transient haemiparesis
- Serum sodium elevated
- Serum potassium normal or slightly low
- Abdominal pain can be identified in some cases but not a typical presentation

Treatment

- Administration of insulin
- Fluid replacement
- Monitor and treat electrolyte imbalances
- Monitor level of consciousness

Hyperglycemic Hyperosmolar Nonketone acidosis (State) (HHNK/HHS)

In your small groups, answer the following questions and **BRING TO CLASS:**

Dalam grup kecil anda, jawablah pertanyaan dibawah ini dan **BAWA KE KELAS**:

1. What is HHNK/apa itu HHNK?
2. What are causes for HHNK/Apa saja penyebab HHNK?
3. What are signs and symptoms for HHNK/apa tanda dan gejala HHNK?
4. What is the treatment for HHNK in the article/apa penanganan HHNK dalam artikel?
5. What treatment, if any, have you seen for HHNK/penanganan apa, jika ada, yang pernah kamu lihat untuk HHNK?

Questions

- Kisiel, M., & Marsons, L. (2009). Recognizing and responding to hyperglycaemic emergencies.*British Journal Of Nursing*, *18*(18), 1094-1098.
- Jerreat, L. (2010). Managing diabetic ketoacidosis. *Nursing Standard*, *24*(34), 49-56.