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MARTRIC NO: 17/MHS03/023

ANATOMY(C.O)

METABOLISM ASSIGNMENT

**POTASSIUM TOXICITY VALUE AND DEFICIENCY MANIFESTATION**

1. >2.5 mol/kg of potassium can theoretically overwhelm the capabilities of the kidneys and cause hyperkalaemia. (Each KCL tablet contains 8 mmol)
2. Massive ingestions of >40 x 600 mg tablets prompts early planning for dialysis.
3. Small ingestions are usually benign in patients with a normal renal function.
4. Patients with renal or cardiac impairment are at increased risk.
5. Children: 3 x 600mg tablets could potentially cause severe hyperkalaemia in a 10 kg toddler.
6. Clinical features:

* GI symptoms (abdominal pain, nausea and vomiting), ileus and perforation have also occurred.
* Lethargy, weakness, paraesthesia and hyporeflexia
* Paralysis and bradycardia herald cardiac arrest (serum K > 8 mmol/L)

DEFICIENCY MANIFESTATION OF POTASSIUM

* Weakness and Fatigue
* Muscle cramps and spasms
* Digestive problems
* Heart palpitations
* Muscle aches and stiffness
* Tingling and numbness
* Difficulty in breathing

**CALCIUM TOXICITY VALUES AND DEFICIENCY MANIFESTATIONS**

1. HYPERCALCEMIA:occurs when serum calcium levels are 10.5 mg/dL (also expressed as 2.63 mmol/L) or greater depending on normative laboratory values. It can be induced by excess intake of calcium or vitamin D, but it is more commonly caused by conditions such as malignancy and primary hyperparathyroidism.
2. HYPERCALCIURIA :When serum calcium levels rise above 12 mg/dL, the kidney's ability to reabsorb calcium is often limited; in turn, hypercalciuria can occur, particularly with increased calcium or vitamin D intake. Hypercalciuria is present when urinary excretion of calcium exceeds 250 mg/day in women or 275-300 mg/day in men.

DEFICIENCY MANIFESTATION OF CALCIUM

* Anorexia
* weight loss
* Polyuria
* heart arrhythmias
* fatigue
* soft tissue calcifications

**MAGNESIUM TOXICITY VALUE AND DEFICIENCY MANIFESTATION**

Symptoms of magnesium toxicity usually develop after serum concentrations exceed 1.74–2.61 mmol/L.

DEFICIENCY MANIFESTATION OF MAGNESIUM

* Hypotension
* Nausea
* Vomiting
* retention of urine
* ileus
* depression
* lethargy before progressing to muscle weakness.
* difficulty breathing
* extreme hypotension
* irregular heartbeat
* Facial flushing

**IRON TOXICITY VALUE AND DEFICIENCY MANIFESTATION**

Peak serum iron levels below 350 micrograms/dL are associated with minimal toxicity. Levels between 350 to 500 micrograms/dL are associated with moderate toxicity. Levels above 500 micrograms/dL are associated with severe systemic toxicity.

DEFICIENCY MANIFESTATION OF IRON

* dizziness
* low blood pressure and a fast or weak pulse
* headache
* fever
* shortness of breath and fluid in the lungs
* a grayish or bluish color in the skin
* jaundice (yellowing of the skin due to liver damage)
* seizures

**TOXICITY VALUE AND DEFICIENCY MANIFESTATION OF CHLORIDE**

1.)Hyperchloremia is an electrolyte disturbance in which there is an elevated level of the chloride ions in the blood.The normal serum range for chloride is 96 to 106 mEq/L, therefore chloride levels at or above 110 mEq/L usually indicate kidney dysfunction as it is a regulator of chloride concentration.

SYMPTOMS

* Dehydration - due to diarrhea, vomiting, sweating
* Hypertension - due to increased sodium chloride intake
* Cardiovascular dysfunction - due to increased sodium chloride intake
* Edema - due to influx in sodium in the body
* Weakness - due to loss of fluids
* Thirst - due to loss of fluids
* Kussmaul breathing - due to high ion concentrations, loss of fluids, or kidney failure
* High blood sugar - due to diabetes
* Hyperchloremic metabolic acidosis - due to severe diarrhea and/or kidney failure
* Respiratory alkalosis - due to renal dysfunction

2.) Hypochloremia (Hypochloraemia) is an electrolyte disturbance in which there is an abnormally low level of the chloride ion in the blood. The normal serum range for chloride is 97 to 107 mEq/L. It is sometimes associated with hypoventilation.It can be associated with chronic respiratory acidosis.

SYMPTOMS

* excessive fatigue.
* muscle weakness.
* breathing problems.
* frequent vomiting.
* prolonged diarrhea.
* excessive thirst.
* high blood pressure.