

A worried and anxious pregnant mother brings her 3-year-old son to the emergency room after he experienced several episodes of vomiting and abdominal pain for the past two hours. His vomit is coffee ground in appearance. He is irritable and lethargic. His blood pressure is 80/50 mm Hg and pulse rate is 120/min. Examination shows a normal oropharynx; chest auscultation is within normal limits. Abdomen is soft and mildly tender at the epigastrium; there is no hepatosplenomegaly. Extremities are cold to touch. Initial laboratory studies show:

Hemoglobin	10.3 g/L
Leukocyte count	14,500/mm ³
Bicarbonate	18 mEq/L

Chest x-ray is within normal limits. Abdominal imaging shows radioopaque tablets in the stomach. Intravenous normal saline is started. Which of the following is the most appropriate next step in management?

- ☐ A. Sodium bicarbonate
- ☐ B. Deferoxamine
- ☐ C. Magnesium sulfate
- ☐ D. Hemodialysis
- ☐ E. Calcium EDTA
- ☐ F. Calcium gluconate
- ☐ G. Oral succimer
- ☐ H. N-acetylcysteine

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Chest x-ray is within normal limits. Abdominal imaging shows radioopaque tablets in the stomach. Intravenous normal saline is started. Which of the following is the most appropriate next step in management?

- ☐ A. Sodium bicarbonate [9%]
- ☒ B. Deferoxamine [64%]
- ☐ C. Magnesium sulfate [1%]
- ☐ D. Hemodialysis [2%]
- ☐ E. Calcium EDTA [6%]
- ☐ F. Calcium gluconate [1%]
- ☐ G. Oral succimer [8%]
- ☐ H. N-acetylcysteine [9%]

Proceed to Next Item

Explanation:

User Id: [REDACTED]

This 3-year-old boy is suffering from acute iron poisoning. Pre-natal vitamins, which are rich in iron appear as radiopaque tablets seen on abdominal x-ray. The mechanism of iron poisoning is free radical production and lipid peroxidation, which impairs various cell processes, leading to systemic manifestations. These include abdominal pain and hematemesis, hypovolemic shock, and metabolic acidosis. This boy's low bicarbonate level, hypotension, and cool extremities indicate that he should be given intravenous volume resuscitation as well as intravenous deferoxamine, the antidote for serious iron poisoning.

(Choice A) Sodium bicarbonate is used in cases of tricyclic antidepressant and aspirin

☐ H. N-acetylcysteine [9%]

Proceed to Next Item

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(Choice A) Sodium bicarbonate is used in cases of tricyclic antidepressant and aspirin overdose.

(Choice C) Magnesium sulfate is used in patients suffering from torsades de points induced by a prolonged QT interval.

(Choice D) Hemodialysis is the treatment choice for severe lithium toxicity because it is the most dialyzable toxin.

(Choice E) Calcium EDTA is a lead chelator and is used for moderate to severe lead poisoning. Children with lead poisoning present with irritability, poor appetite, headaches, abdominal pain and anemia.

(Choice F) Calcium gluconate is cardio-protective in cases of hyperkalemia.

(Choice G) Oral succimer can be used as a chelating agent in mild or moderate lead poisoning.

(Choice H) N-Acetylcysteine is used in cases of acetaminophen toxicity.

Educational Objective:

Iron poisoning disrupts basic cell processes, causing systemic manifestations including abdominal pain, hematemesis, shock and metabolic acidosis. It commonly occurs in children of pregnant women taking pre-natal vitamins because children often confuse brightly colored iron pills for candy. Treatment of iron poisoning involves deferoxamine, which binds ferric iron, allowing urinary excretion.

Time Spent: 3 seconds

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