ASPIRIN INTOXICATION

(Last updated 05/02/2019; Reviewers: Naresh Veerabattini, MBBS; Rudy Tedja, DO)

PRESENTING COMPLAINT: Drug Overdose history, seizures, vomiting

FINDINGS

- A  Check airway
- B  ↑RR, ↑depth of respiratory effort
- C  ↓BP, ↑HR
- D  Variable altered (V, P, U, D)*
- E  Fever (hyperthermia), Tinnitus.
- Lpc  1) Serum salicylate on admission (>40mg/dl- mostly intoxication) and repeat every 2 hours until two continued levels show a ↓ trend
   2) ABG- Early phase - ↓Pco₂, ↑PH (primary respiratory alkalosis)
      Delayed phase - mixed primary respiratory alkalosis-primary metabolic acidosis.
      3) Others- creatinine, electrolytes, coagulation studies, lactate.
- Upc  Hyperechoic focus consistent with ingested pills within the stomach.

*V (verbal), P (pain), U (unconsciousness), D (delirious)

PC (point-of-care)

OTHER HISTORY

- Predisposing conditions: Patients with a history of drug abuse, suicidal
- Symptoms:
  - Mild toxicity: lethargy, nausea, vomiting, tinnitus, dizziness
  - Moderate toxicity: mild toxicity symptoms + fever, ↑RR, dehydration, sweating, loss of coordination, restlessness
  - Severe toxicity: ↓BP, acute kidney injury, metabolic acidosis, pulmonary edema and CNS features (coma, seizures)

DIFFERENTIAL DIAGNOSIS

Overdose of another substance such as tricyclic antidepressant

OTHER INVESTIGATIONS

- Severity Score of plasma salicylate concentration
  - Mild toxicity: 300-500 mg/L or 30-50 mg/dL
○ Moderate toxicity: 500-700 mg/L or 50-70 mg/dL
○ Severe toxicity: >750 mg/L or >75 mg/dL
● Therapeutic salicylate level: 100-300 mg/L or 10-30 mg/dL
● Labs:
  ○ Serum salicylates on admission and repeat levels
    ■ Caveat: may not be accurate if measured less than 6 hours of ingestion because of pylorospasm, bezoar formation, or the use of enteric-coated tablets
    ■ Salicylate levels may not peak until more than 12 hours after ingestion of enteric coated tablets, may peak as late as 35 hours after ingestion
● Monitoring:
  ○ Serum salicylate levels every 2 hours until peak level is reached.
  ○ Acidemia: ABG every 4 hours
  ○ Urine pH every 4 hours
● Imaging: CT head without contrast to rule out cerebral edema

THERAPEUTIC INTERVENTIONS
● Prevention of further absorption
  ○ If taken within 2 hours, 50 gr oral activated charcoal.
    ■ In patients who have ingested enteric-coated or sustained release preparation, repeated doses of activated charcoal are recommended to reduce the ongoing reabsorption.
  ○ Protect patient’s airway
● Increase the elimination of the drug
  ○ Urine alkalization with the administration of sodium bicarbonate infusion
    ■ The goal is urine pH >7.5
    ■ Hypokalemia must be corrected or prevented for alkalinization to be effective
  ○ Hemodialysis is indicated if:
    ■ Altered mental status
    ■ Cerebral edema or seizures
    ■ Acute kidney injury with oliguria or anuria
    ■ Non-cardiogenic pulmonary edema
    ■ Severe anion-gap metabolic acidosis
    ■ Plasma concentration of >1000 mg/L or >100mg/dL
    ■ Clinical deterioration despite aggressive and appropriate supportive care
● Contact/consult:
  ○ American Association of Poison Control at (800)222-1222, 24 hours, 7 days a week
  ○ Nephrology consultation

ONGOING TREATMENT
● Follow up:
  ○ Monitor serum salicylates level to ensure the level is not increasing because of continued absorption, particularly with ingestion of extended-release/enteric coat formulation
  ○ Monitor urine pH to reach goal pH >7.5
○ Monitor presence of hypokalemia
○ Monitor blood pH to keep blood pH < 7.55
○ Monitor serum glucose

● Further diagnostics:
  ○ Serial serum salicylates
  ○ Serial urine pH every 4 hours
  ○ Serial arterial blood gases every 4 hours
  ○ Serial serum glucose every 4 hours

● Further treatment:
  ○ Continue sodium bicarbonate infusion until salicylate levels are undetectable
  ○ Maintain normokalemia
  ○ Maintain normoglycemia

● Prophylaxis: none

CAUTION

● Be careful to preserve minute ventilation requirements during intubation/mechanical ventilation
● Acetazolamide is contraindicated in the standard management of salicylate poisoning because bicarbonate loss in urine promotes metabolic acidosis which promotes salicylates movement to the brain.
● Complications: Cardiac arrest, seizures, coma

REFERENCES & ACKNOWLEDGMENTS

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