Bromide Drug Monitoring

Indications for Ordering

- Monitor drug therapy
- Use when bromide toxicity is suspected (eg, hyperchloremia with negative anion gap and altered mental status)

Test Description

Quantitative spectrophotometry

Tests to Consider

Primary test
Bromide, Serum or Plasma 2011436

Disease Overview

Clinical issues

- Bromide is found in
  - Ipratropium nasal and inhaler sprays, as well as tiotropium inhalers
    - Nasal sprays are used for numerous conditions – allergic disease predominates
    - Inhalers are used primarily in chronic obstructive pulmonary disease
  - Anticonvulsant therapies (generally outside of U.S.)
  - Anesthetic agents (eg, rocuronium)
- Bromism (chronic bromide poisoning) is associated with psychiatric problems and altered mental status
  - Bromide has been removed from most over-the-counter products in the U.S.
  - Bromism is now rare in the U.S.

Physiology

- Sedative
- Anticonvulsant
- Bronchodilator
  - Anticholinergic mechanism blocks effect of acetylcholine on bronchi and nasal passages
  - Muscles relax and airways open

Drug profile

- Binds competitively to cholinergic receptors on motor endplate of the myoneural junction
  - Results in block of neuromuscular transmission of electrical impulses to the muscle
  - In high levels, replaces chloride in nerve transport mechanisms
- Eliminated primarily by hepatic reuptake and biliary excretion
  - Preferentially reabsorbed by the kidneys over chloride
  - Results in a long half-life

Test Interpretation

Analytical sensitivity – 10 mg/dL

Results

- Sedation
  - Therapeutic range
    - 10-50 mg/dL
  - Toxic range
    - Values >50 mg/dL may be associated with mild toxicity
- Epilepsy seizure control
  - Therapeutic range
    - 75-150 mg/dL
    - Many patients will exhibit toxic symptoms within this range
  - Toxic range
    - >150 mg/dL – may be associated with debilitating toxicity
    - >300 mg/dL – may be fatal