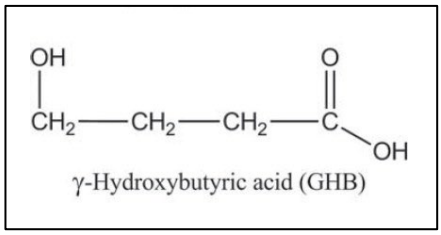
Clinical Pharmacology & Toxicology Pearl of the Week

~ Gamma hydroxybutyrate (GHB) ~

What is GHB?

- ✓ An endogenous neurotransmitter as well as a metabolite and precursor of the neurotransmitter GABA
- ✓ A drug of abuse that acts as a central nervous system depressant
- ✓ It is a GABA-B agonist, like baclofen. This receptor agonism is thought to be responsible for the CNS depressant symptoms and seizures



γ-Hydroxybutyric acid (GHB)

- ✓ It crosses the blood-brain barrier easily
- ✓ It is well absorbed orally with peak blood concentrations 30-60min post-ingestion
- ✓ It has various street names: “Liquid ecstasy”, “Juice”, “G”, “Liquid G” or “Liquid X”
- ✓ It has been implicated in drug facilitated sexual assaults due to its rapid effects as a central nervous system depressant and difficulty detecting on urine drug screens

Clinical presentation

- ✓ Symptoms of GHB toxicity include short term anterograde amnesia, drowsiness, coma, bradycardia, hypotension and respiratory depression
- ✓ Symptoms of CNS depression will usually occur within 15-45 minutes after ingestion. CNS depression will usually persist for 1-3 hours with complete recovery typically within 4-8h
- ✓ Seizures can occur in both GHB intoxication and withdrawal
- ✓ Respiratory failure due to sedation can paradoxically result in extreme combativeness at the time of intubation
- ✓ GHB withdrawal symptoms can include agitation, visual hallucinations and seizure

Investigations

- ✓ GHB can be detected in the urine for up to 12h after exposure and 4-5h after exposure in the serum
- ✓ Due to rapid metabolism and elimination of GHB, there is poor correlation between serum and urine concentrations and clinical presentation
- ✓ GHB is not detectable using Alberta Precision Laboratories’ assay. It is only available to an ordering provider after consultation with the Clinical Biochemist on call. If it is determined that a) there is high suspicion of exposure and b) the sample was collected within the appropriate time after exposure, then the sample is sent to a laboratory in Ontario for further testing. Preservation of GHB in urine is best achieved if the sample is frozen. Post collection, the urine sample should be placed on ice.

Management

- ✓ Airway protection may be required in those with profound coma
- ✓ Seizures from GHB intoxication or withdrawal should be treated with benzodiazepines
- ✓ Bradycardia generally does not require intervention however atropine may be useful if hemodynamically unstable bradycardia is present
- ✓ Persistence of dizziness and ataxia may last for several weeks after last use

The Clinical Pharmacology (CP) physician consultation service is available Mon-Fri, 8am-5pm, excluding stat holidays. The on-call physician is listed in ROCA on the AHS Insite page. CP consultations are also available through Netcare e-referral, Specialist Link, and RAAPID. You can also find us in the Alberta Referral Directory (ARD) by searching "Pharmacology" from the ARD home page. Click HERE for more details about the service.

The Poison and Drug Information Service (PADIS) is available 24/7 for questions related to poisonings. Please call 1-800-332-1414 (AB and NWT) or 1-866-454-1212 (SK). Information about our outpatient Medical Toxicology Clinic can be found in Alberta Referral Directory (ARD) by searching "Toxicology" from the ARD home page.

More CPT Pearls of the Week can be found HERE.

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