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From: Ron Kirschner, MD, Medical Director
To: ALL HEALTH CARE PROFESSIONALS
Subject: Physostigmine: An underused antidote
Date: 6/8/16

- Physostigmine (PHY) is a short-acting cholinesterase inhibitor that can reverse mental status changes due to anticholinergic toxicity without causing excessive sedation.
- Its use declined sharply after a 1980 report of 2 tricyclic antidepressant (TCA) overdose patients with QRS widening who had bradycardic arrest following PHY administration for seizures (Suchard). Those patients might have been more appropriately treated with sodium bicarbonate for their QRS widening, and benzodiazepines for their seizures.
- **PHY is most useful in cases where the main problem is altered mental status. For patients with QRS widening, seizures, or hypotension, addressing those problems should take precedence.**
- We don't recommend PHY in patients with relative bradycardia (HR <90), wide QRS, or diaphoresis. Exposure to a TCA is not, by itself, considered a contraindication by most toxicologists.
- If given to patients who are not anticholinergic, PHY can cause cholinergic effects such as bradycardia, diaphoresis, vomiting, and diarrhea. These effects are usually self-limited (Rasimas).
- Cholinergic effects can also occur when PHY is given too rapidly. We recommend 1.5-2 mg IV over 5 minutes (adult or adolescent). Slow administration is facilitated by diluting 2 mg PHY in 10 mL of saline.
- Reversal of delirium might not be evident until 10-15 minutes after PHY administration.
- The duration of action is short (1-2 h). If delirium recurs PHY can then be repeated as needed.
- Compared to benzodiazepine sedation, **PHY treatment of anticholinergic delirium is associated with lower complication rates, fewer intubations, and shorter hospital stays** (Burns).
- Consider calling the poison center to discuss PHY for patients with anticholinergic drug/plant exposure and agitated delirium OR CNS depression with potential airway compromise.

References

Burns MJ. Comparison of physostigmine and benzodiazepines for anticholinergic poisoning. *Ann Emerg Med* 2000; 35: 374.
Rasimas JJ. Revival of an antidote: Bedside experience with physostigmine. *J Am Assoc Emerg Psych* 2014; 12: 5.
Suchard JR. Assessing physostigmine's contraindication in cyclic antidepressant ingestions. *J Emerg Med* 2003; 25: 185.



Our certified nurse specialists in poison information and physician toxicologists are available 24 hours a day to answer your questions.