

Brom(ism)ance: An Escalating Relationship with Dextromethorphan

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Background

- Dextromethorphan (DXM) is an over the counter antitussive abused for its NMDA receptor antagonism/dissociative effects.
- DXM is widely available as a hydrobromide salt (DXM HBr).
- Serum bromide (Br) elevation has been described as falsely elevating serum chloride (Cl).
- Neither tolerance nor dependence have been described in DXM abusers.

Hypothesis

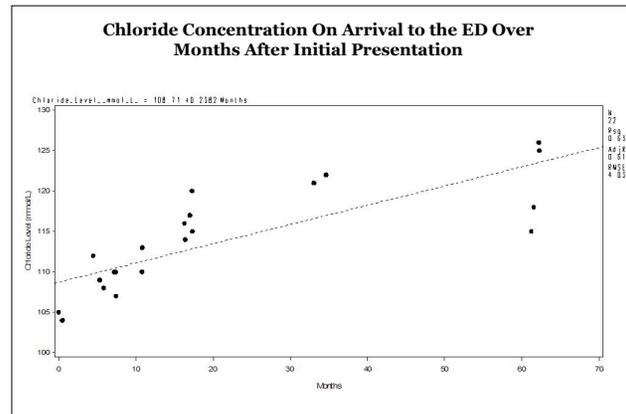
- Chronic DXM HBr abuse and tolerance may lead to escalating doses.
- This tolerance may be demonstrated by a gradual and spurious elevation in serum chloride.

Methods

- We describe an adult male who frequently presented to an urban academic emergency department following recurrent use of a single DXM HBr formulation.
- Initial serum Cl concentrations at each visit for DXM HBr ingestion were compared over time via linear correlation.

Results

- 28 visits were included over 62 months from the first ED presentation.
- Cl concentrations were available for 23 visits.
- Cl ranged from 104 mmol/L to 126 mmol/L.
- Linear correlation using Cl (y-axis) and months from first ED visit (x-axis) revealed: $R^2 = 0.6321$ ($p < 0.001$); slope = 0.238; standard error of the slope = 0.041 (for every increase in month number, there was an increase in chloride of 0.238 ± 0.041 mmol/L).



Discussion

- Linear correlation indicates an increase in measured serum Cl.
- Results suggest the development of tolerance and an escalation in dosing of DXM HBr.
- Patient confirmed a subjective need to escalate his dosing.
- This patient experience is compelling both in theory and by statistical evaluation.

Conclusion

- The elevation of the patient's serum Cl (i.e. Br) over a 5-year period suggests development of physical tolerance.



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