



Methamphetamine Use: The Unlikely Culprit

David Do, DO, OHSU and Marian Fireman, MD, OHSU

BACKGROUND

Methamphetamine use has become more prevalent in the United States resulting in psychiatric complications, particularly psychoses, which are common presentations in the emergency setting. Urine drug screens are frequently used as diagnostic tools for detecting methamphetamine-induced psychosis; however, results can be misleading. The following case illustrates that point.

CASE HISTORY

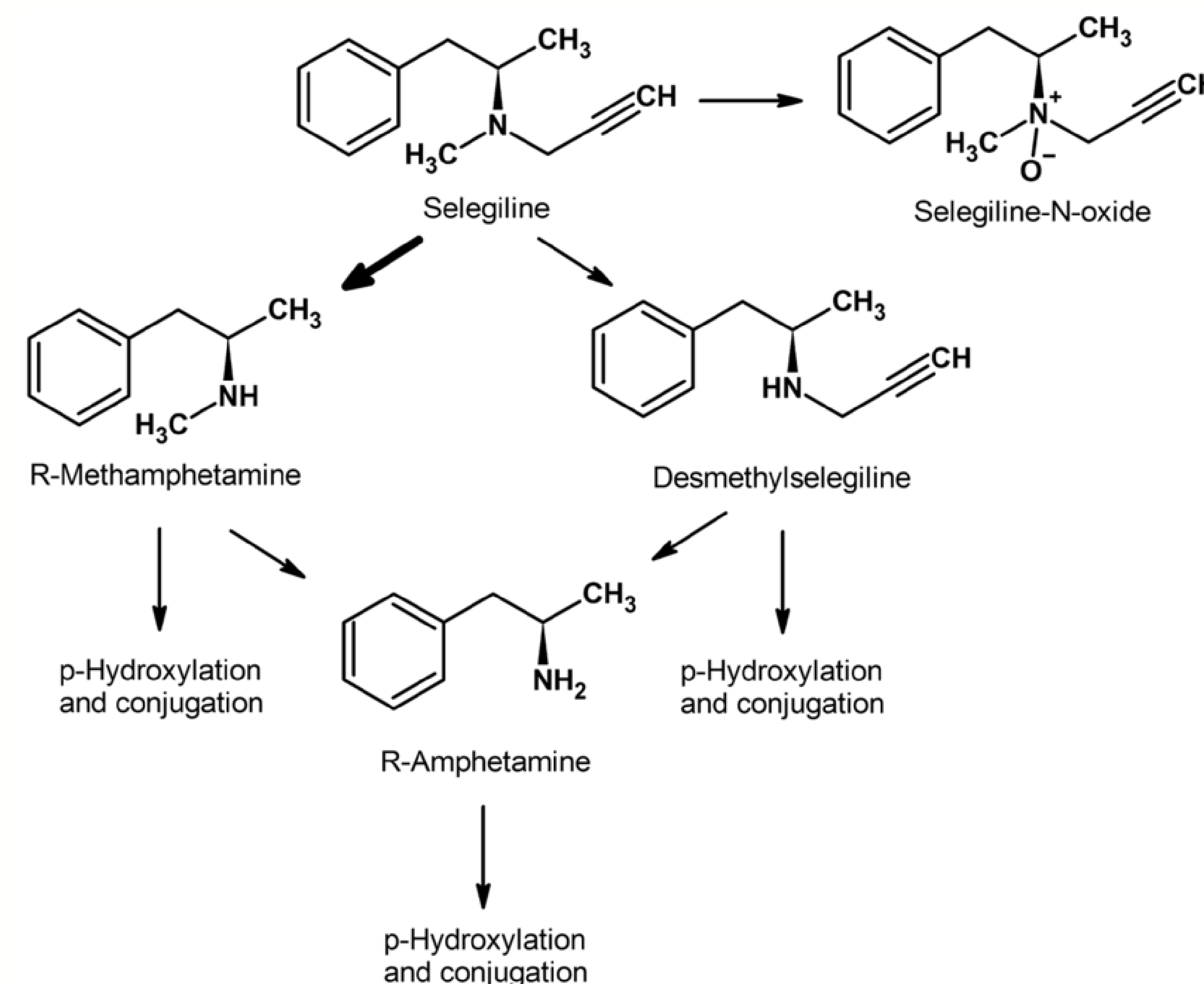
A 62-year-old male presented to the emergency room with new-onset psychosis. He endorsed auditory hallucinations and paranoia that started 10 days prior to this evaluation.

He reports a history of depression and hypertension. Currently taking metoprolol and a selegiline patch. He reports daily cannabis use. Denies any other illicit substances.

A complete evaluation including CBC, chemistries, RPR, HIV, TSH, ceruloplasmin, ANA, and CT of the head without contrast were all unremarkable. Urine drug screen was positive for amphetamine and cannabis. GC/MS confirmation test showed amphetamine level of 948 and methamphetamine level of 1,766. Methamphetamine isomer testing was done that resulted in 9% D-Methamphetamine.

Prior to the isomer testing, his diagnosis was believed to be methamphetamine induced psychosis with delusions and hallucinations.

RESULTS



Literature search and toxicology consultation revealed that selegiline may cause a false positive result on urine drug screens using immunoassay technology. Selegiline's metabolites include Selegiline-N-Oxide, Desmethylselegiline, R-Methamphetamine, R-Amphetamine, and their conjugated p-hydroxy derivatives, thus causing a positive result on both screening and confirmatory testing. Ratio of amphetamine to methamphetamine < 0.24 is typically reflective of methamphetamine use. Isomer levels may also help differentiate between a positive test from selegiline and methamphetamine as the R-isomer is found in prescription medications while the pure S-isomer is most frequently detected in samples from individuals with methamphetamine use. Our patient's psychosis was most likely caused by selegiline rather than use of methamphetamine.

DISCUSSION

This case illustrates the importance of considering false positives and false negatives when evaluating urine drug screening results. Confirmatory tests using GC-MS should be obtained in cases where a false positive is suspected. Many commonly prescribed medications including amantadine, bupropion, metformin, promethazine, pseudoephedrine, ranitidine and trazodone may lead to false positives on screening tests. In addition to selegiline, Vick's vapor rub may lead to a false positive on both screening and confirmatory tests. The diagnosis of methamphetamine-induced psychosis should not be made based on the results of the drug screen alone but in the context of the entire patient presentation. Proper care of this patient was delayed because of the suspicion of methamphetamine use.

References

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