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Caffeine-Induced Psychosis in a Bodybuilder With Chronic Testosterone and Amphetamine/Dextroamphetamine Misuse

To the Editor: Caffeine is the world's most-consumed psychoactive substance.¹ It is also considered a performance-enhancing substance by athletes and bodybuilders and is sometimes used excessively for this purpose.² Caffeine's action on adenosine and dopamine^{3,4} receptors is well known. In addition, 1 study² found that caffeine significantly increased levels of testosterone by up to 65% and cortisol by up to 90% after acute ingestion. Additionally, 1 animal study⁵ suggested that caffeine has a synergistic effect of *d*-amphetamines in improving discriminative behavior in rats, and this effect was nullified by pretreatment with haloperidol. The combination of all of these performance-enhancing substances can potentially cause psychosis.^{3,4,6,7} There are no previous reports about caffeine's psychogenic effect on bodybuilders' chronically using testosterone and amphetamine/dextroamphetamine as a performance-enhancing substance.

Case report. A 48-year-old male bodybuilder with no medical or psychiatric history was admitted for new-onset psychosis with delusions of being able to predict the death of high-profile government officials. He linked his predictions to religion and major astrological events and developed a new interest in numerology science, which was out of character for him at baseline. He posted his beliefs on social media, which led to Secret Service involvement followed by psychiatric hospitalization.

Collateral information from his wife confirmed that the patient's symptoms were new and were interfering with his work and social life. She said the patient became more isolated and irritable and unable to work as effectively as usual. He also became increasingly more interested in Bible scriptures and believed he was the "king" who was going to lead people to the end of times. His wife also added that the patient had always been a nonreligious man before onset of his symptoms.

Prior to this episode, the patient was using unknown amounts of nonprescribed testosterone and amphetamine/dextroamphetamine 60 mg daily as a performance-enhancing substance in cyclical fashion for 7 months each year for the last 4 years. There was no past history of psychosis or any other psychiatric disorder despite his regular misuse of testosterone and amphetamine/dextroamphetamine. He reported finishing his last cycle of amphetamine/dextroamphetamine a few days prior to the emergence of psychosis, which was followed by an increased amount of caffeine ingestion, drinking a minimum of 7 espressos each morning (~560 mg of caffeine) instead of his usual 1 daily cup (~80 mg of caffeine). His urine toxicology result at admission was positive for amphetamines.

No aggression was observed or threats were made during hospitalization, and the psychosis resolved 5 days later without the

use of antipsychotics per the patient's choice. He was discharged home with Secret Service notification, outpatient follow-up instructions, and strong recommendations against using the amphetamine/dextroamphetamine combination.

Several performance-enhancing substances have been implicated in psychosis and mood disorders,² such as anabolic steroids, testosterone, and amphetamine/dextroamphetamine.⁶ Although steroids and amphetamine/dextroamphetamine have been reported to cause psychosis independently,^{2,6,7} our patient was never psychotic despite using such substances regularly for the last 4 years. There was no recent change in pattern or amount of their use. His psychosis occurred with the recent, excessive caffeine intake, which could possibly cause psychosis by itself^{3,4,7} or synergistically with another performance-enhancing substance.

This case illustrates the possible interaction and synergism of caffeine with other performance-enhancing substances like testosterone and amphetamine/dextroamphetamine, resulting in increased levels of cortisol and testosterone and potentially inducing psychosis.

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Camila A.B. Gomes, MD^a

calbuquerquegom@maimonidesmed.org

Yassir Mahgoub, MD^a

^aDepartment of Psychiatry, Maimonides Medical Center, Brooklyn, New York

Potential conflicts of interest: None

Funding/support: None

Additional information: Information has been de-identified to protect anonymity.

Published online: June 21, 2018.

Prim Care Companion CNS Disord 2018;20(3):17102197

To cite: Gomes CAB, Mahgoub Y. Caffeine-induced psychosis in a bodybuilder with chronic testosterone and amphetamine/dextroamphetamine misuse. *Prim Care Companion CNS Disord*. 2018;20(3):17102197.

To share: <https://doi.org/10.4088/PCC.17102197>

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