

The Reply



We would like to thank Mullins and Schwarz for their thoughts on our publication and would like to take the opportunity to respond to their comments.

“Krokodil” is the street name for the synthetic morphine analogue, desomorphine. Homemade desomorphine is known for its addictive potential and devastating tissue damages, including auto amputations of extremities.¹ We reported the case of Krokodil causing extensive tissue damage, including auto amputation, in a chronic drug abuser to educate the medical community about this new drug and its devastating effects. This issue also was highlighted at the same time by the media, given its significant impact on public health and its socioeconomic aspects.

The patient’s medical and social history, along with the temporal profile of illness, correlated with the known and well-described side effects of Krokodil from the available resources in literature.¹⁻³ We accept the fact that no confirmatory chemical analysis was done on the above-reported case. This is because the current commercially available drug screening tests cannot detect this drug. Routine screening tests done at hospitals will test for opiates, but cannot identify desomorphine. This will limit opportunities for physicians to confirm the drug usage in patients with clinical findings compatible with usage of this drug. Recent data suggest that novel sol-gel titania film-coated needles for solid-phase dynamic extraction gas chromatography/mass spectrometry analysis will be a promising technique for desomorphine and desocodeine analysis in urine.⁴

We encountered this patient in the early part of 2013, at which point there were no reported cases or news reports of “Krokodil” use in the US. Contrary to the authors’ statements, there are reports from Europe, especially from

Ukraine, about the use of Krokodil on a routine basis.⁵ The epidemiology varies from region to region with change in socioeconomic status and availability of raw materials. As per one article by Gahr et al,⁶ millions of people in Russia are still dependent on desomorphine, and authorities seized several million doses of desomorphine in 2011.

The ingredients with which this street drug is made are readily available in the US, and hence, raises the possibility of this becoming the next big designer drug in the US. By reporting this case, we aim to create awareness among health care personnel about the potential threat of this highly addictive and fatal street drug. It also highlights the urgent need to develop a commercially available test to screen for this drug.

Santhosh Gheevarghese John, MD^a

Unnikrishnan Pillai, MD^b

^aDepartment of Medicine
University of Arizona
Tucson

^bDepartment of Nephrology
Indiana University Ball Memorial Hospital
Muncie

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References

1. US Drug Enforcement Administration, Office of Diversion Control. Desomorphine. Available at: www.deadiversion.usdoj.gov/drug_chem_info/desomorphine.pdf. Accessed February 24, 2014.
2. TOXNET Toxicology Data Network. Desomorphine. Available at: <http://toxnet.nlm.nih.gov/cgi-bin/sis/search/a?dbs+hsdb:@term+@DOCNO+8070>. Accessed February 26, 2014.
3. Medtox Laboratories. Emerging European drug problem has the attention of U.S. drug experts; January 2012. *Medtox Journal on Drug Abuse Recognition*. Available at: <http://www.medtox.com/Resources/Images/7060.pdf>. Accessed April 13, 2014.
4. Su CJ, Srimurugan S, Chen C, Shu HC. Sol-gel titania-coated needles for solid phase dynamic extraction-GC/MS analysis of desomorphine and desocodeine. *Anal Sci*. 2011;27(11):1107-1113.
5. Booth RE. ‘Krokodil’ and other home-produced drugs for injection: a perspective from Ukraine. *Int J Drug Policy*. 2013;24:277-278.
6. Gahr M, Freudenmann RW, Hiemke C, Gunst IM, Connemann BJ, Schönfeldt-Lecuona C. Desomorphine goes “crocodile”. *J Addict Dis*. 2012;31:407-412.

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