

## Fungal endophthalmitis in intravenous drug users injecting buprenorphine contaminated with oral *Candida* species

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**TO THE EDITOR:** Within the last 12 months, four injecting drug users (IDUs) who had been injecting buprenorphine presented to the Royal Victorian Eye and Ear Hospital with endogenous fungal endophthalmitis (EFE) involving *Candida* species. All four patients admitted that they had diverted or obtained diverted sublingual buprenorphine from the oral cavity after it was dispensed. They had dissolved the remaining drug in water and injected it intravenously. We present an illustrative case.

A 28-year-old woman presented with a 4-week history of left eye pain and erythema. She had a 10-year history of intravenous drug use. Over the previous 6 months, she had been regularly injecting buprenorphine that was prescribed to a friend. The friend had been removing the partially dissolved buprenorphine from his mouth before giving it to our patient. On examination, the patient could only detect hand movement with her left eye. Fundoscopy showed vitritis with a "snow ball appearance" consistent with EFE.

Treatment involved vitrectomy, intravitreal amphotericin and oral fluconazole. *Candida albicans* was cultured from vitreal specimens. Her visual acuity had improved to 1/60 at the time of discharge.

Intravenous drug use is known to be a risk factor for EFE. *Candida* species are the usual causative organisms, but *Aspergillus* species have also been reported.<sup>1</sup> In the 1980s, there were many reports of candida endophthalmitis in injecting drug users associated with the use of "brown" (or Iranian) heroin. The "brown" heroin required an acidic substance, often lemon juice, as a solvent. Lemon juice was shown to be the source of the candida.<sup>2</sup> However, over the past 10 years, the heroin available in Australia has been water soluble, and sterile or tap water is usually used to dissolve the heroin before injection. None of the cases we report in this letter involved lemon juice

to dissolve heroin or buprenorphine before injection.

Buprenorphine has been available in Australia since 2001 for the treatment of opiate addiction. It is usually dispensed daily by pharmacies in a crushed tablet form. Pharmacists are required to watch patients place and dissolve the medication under the tongue before they leave the pharmacy.

Contamination of injected buprenorphine with orally derived *Candida* species presents a recently recognised cause of fungal endophthalmitis in injecting drug users.<sup>3</sup> Doctors, pharmacists and drug users need to be aware of the risk of this sight-threatening complication.

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- 1 Essman TF, Flynn HF, Smiddy WE, et al. Treatment outcomes in a 10-year study of fungal endophthalmitis. *Ophthalmic Surg Lasers* 1997; 28: 185-194.
- 2 Newton-John HF, Wise K, Looke DF. Role of the lemon in disseminated candidiasis of heroin abusers. *Med J Aust* 1984; 140: 780-781.
- 3 Cassoux N, Bodaghi B, Lenoang P, Edel Y. Presumed ocular candidiasis in drug misusers after intravenous use of oral high dose buprenorphine (Subutex). *Br J Ophthalmol* 2002; 86: 940-941. □

## Randomised trial of intranasal versus intramuscular naloxone in prehospital treatment for suspected opioid overdose

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**TO THE EDITOR:** Two aspects of the recent article by Kelly et al comparing intranasal with intramuscular naloxone in suspected opioid overdose<sup>1</sup> make their study difficult to interpret. The methods allowed for a great deal of bias. There was no attempt to blind evaluators to therapy, and knowing which therapy is to be used *a priori* may influence both therapy selection and perceived outcome.

The second flaw we noted was the use of the Glasgow Coma Scale (GCS) in a non-trauma patient.<sup>2</sup> An improvement in GCS score may represent increased wakefulness or even withdrawal. The use of the GCS does not make it possible to determine what

degree of improvement or worsening the therapy resulted in. In the opioid-intoxicated patient, the "alert/verbal/pain/unresponsive" (AVPU) scale is more appropriate.

We agree that the use of needles in a high-risk patient is dangerous. However, if these patients do not respond to painful stimuli, there should be no danger at all.

- 1 Kelly AM, Kerr D, Dietze P, et al. Randomised trial of intranasal versus intramuscular naloxone in prehospital treatment for suspected opioid overdose. *Med J Aust* 2005; 182: 24-27.
- 2 Fulton JA, Greller HA, Hoffman RS. GCS and AVPU: the alphabet soup doesn't spell "C-O-M-A" in toxicology. *Ann Emerg Med* 2005; 45: 224-225; author reply 225. □

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**IN REPLY:** The prehospital setting for research poses challenges that require some flexibility in study design. While it would have been preferable to have used blinded naloxone and placebo solutions for both routes of administration in our study, financial and operational constraints made this impossible, so some bias in evaluations is possible. However, this is not necessarily in favour of the intranasal route, as before the study many paramedics were very sceptical about the intranasal naloxone preparation. Therapy selection was by random allocation in sealed envelopes as described in our article.

The Glasgow Coma Scale score was chosen as an outcome measure because it was the parameter used operationally for treatment and disposition decisions in the ambulance service within which our study was conducted. We acknowledge its limitations in non-trauma patients.

The potential for needlestick injury in this situation is real. Patients with opioid intoxication may be in cramped locations and may be irritable on waking, increasing the risks involved with handling a "sharp". Given the prevalence of blood-borne viruses in the injecting drug user population, strategies to reduce the risk of needlestick injury are highly desirable. Additionally, a strategy that has been suggested for preventing opioid-overdose-related deaths is to make naloxone more widely available in the community.<sup>1</sup> The intranasal formulation of naloxone may be appropriate for this, as it has significant advantages including reducing risks of