Parenteral poppy seed tea packs a powerful punch

Dominic Monaghan, Brad Peckler

Abstract

Poppy seed tea (PST) has a long history of use for its medicinal (analgesic, anti-diarrhoeal, anxiolytic) effects. It is also commonly used as a recreational drug in its oral form throughout the world, but reports of intravenous use are very rare. We present two cases of intravenously injected PST with dramatic effects in order to create awareness among health professionals of this method of drug use and its potential complications, as well as to help clinicians dealing with opiate-dependent patients to warn them of the risk.

Cases

Both cases are recidivist multi-substance abusers, including glue, opiates, salbutamol (up to 1× inhaler per day), amphetamines and cannabis. They admitted to normally crushing up oral medications, especially codeine, and injecting them through a “microfilter”, claiming to be experienced at using this technique.

On this evening, after drinking a moderate amount of alcohol, they had bought a bag of poppy seeds from a local corner-shop, had boiled them in water and allowed it to cool, then had injected this poppy seed tea through the microfilter.

The 24-year-old man (Case 1) injected approximately only half the amount of Case 2, a 35-year-old man. Within minutes of the injections, both suffered almost identical symptoms and called the ambulance, which arrived 15 minutes later. Both patients had a temperature of about 39°C, heart rate around 170 beats per minute, blood pressure of 120/70 mmHg and were suffering from severe, generalised myalgia, vomiting, dyspnoea and rigors.

They were both treated with salbutamol nebulisers and antiemetics en route to the hospital. On arrival to ED 30 minutes after the drug use, temperatures rose to 40°C, saturations were low at around 90% on room air, and respiratory rates were raised at around 38 per minute. Both had a plethoric appearance, rigors with piloerection, were writhing around the bed in pain from generalised muscle aches, and the vomiting continued.

There were no signs of an opiate toxidrome, although Case 2 (who had injected more) did have a lower respiratory rate, miotic pupils and would fall asleep between periods of agitation, compared to Case 1 who was continuously agitated, tachypnoeic and had normal pupils. Neither had stigmata of septic embolisation. Electrocardiograms showed no QT-prolongation.

Blood tests revealed a mild metabolic acidosis and low white blood cells and a neutropaenia (<0.8x10⁹/L). The chest X-ray showed no infiltrates. Blood pressures peaked at the upper range of normal during the agitated phase before beginning a steady decline.
Hospital course

Both patients were given ceftriaxone plus vancomycin and were treated with intravenous benzodiazepines for the agitation. Blood cultures were sent on both prior to antibiotics. They deteriorated while in the ED with falling blood pressures despite greater than 5L crystalloid infusions each, eventually requiring noradrenaline infusions to maintain a mean arterial pressure of >60 mmHg. At this point they were admitted to the intensive care unit for further management.

Over the next 18 hours both were weaned off noradrenaline, although a further 5L of intravenous fluid was given while in intensive care. White blood cells rose rapidly to >20 then fell slowly, and C-reactive proteins rose to around 200 mg/L. They were continued on intravenous antibiotics (meropenem, followed by cefuroxime and clindamycin for Case 1, and piperacillin/tazobactam followed by cefuroxime and flucloxacillin for Case 2) until discharge.

Renal function remained undisturbed, but both had a mild hepatic transaminitis and a slowing of blood coagulability. Throughout their course they continued to complain of generalised myalgia. They were stepped down from intensive to high-dependency, and then to the general medical wards and at 72 hours they both self-discharged against advice with prescriptions for oral flucloxacillin and salbutamol inhalers.

Blood cultures did not have any growth in either patient.

Discussion

The point of interest in these nearly identical cases is the speed of deterioration.

Patients exhibited a mixed toxidrome but seemed to have predominately sympathomimetic symptoms of agitation, high fever, tachycardia and hypertension (clouded in Case 2 by opiate effects). This clinical picture changed rapidly to that of a sepsis syndrome, featuring high fever with severe rigors, and progressive hypotension requiring massive crystalloid infusions and eventually vasopressors. There was initial neutropaenia which added to this picture, although their subsequent hospital course suggested that this was not an issue of an infective agent, but of a toxin.

Opium has been used for millennia for medicinal (anti-diarrhoeal and analgesic) and relaxation purposes, but equally as a recreational drug. Poppy seed tea is commonly used in New Zealand in its oral form among drug users, as documented in a 2007 survey of local opiate-dependent patients in Wellington.40

Forty percent of the patients surveyed used oral PST regularly, with half of them citing it as their main source of opiates. Potential advantages mentioned in this paper were the reduced cost, the oral use of the drug and resultant reduction in complications of intravenous use of other drugs, and the ease of preparation. It was noted that several patients had been able to completely transition from IV morphine to oral PST, but also that none of the patients used - or knew of anyone else who used - PST intravenously.

Another case report from Melbourne, Australia in 2006 describes two cases of opiate addicts using poppy seed tea orally to maintain their addiction and notes that the use of PST was increasing at that time.41 The injection of PST is mentioned in major online drug-user forum, such as www.blulight.ru and www.drugs-forum.com, almost always
strongly advising other users not to try it, citing reports of anaphylactic and septic shock.

Opium alkaloids, especially morphine and noscarpine, but also codeine, papaverine and thebaine are derived from opium poppies (Papaver somniferum). Although the normal process of extraction is by “milking” latex from unripe fruit all parts of a poppy plant can contain these substances, and ingestion of dried poppy seeds can lead to detectable levels of opiates in serum or urine samples.

Bulk packs of poppy seeds are reported to contain a wide range of opiate concentrations from 1.5–294 mg/g of seeds, and it is possible to have systemic morphine effects from doses of poppy seeds solely in the form of toppings on baking products, despite the fact that washing the seeds (which is common practise by manufacturers) has been shown to decrease up to half of the free morphine and codeine.

Preparation of the tea is through washing or soaking poppy seeds in water for varying lengths of time, and it has been shown that soaking them for only 5 minutes with constant agitation liberates 50% of the available morphine content. In our local survey in 2007, every PST user had a unique method of preparation, ranging from 15 minutes to 12 hours of soaking prior to boiling, and the use of other ingredients to make it more palatable.

Along with the ease of liberating opiates for abuse (IV in this case) comes the risk of concentrating contaminants on the poppy seeds, including heavy metals like cadmium, lead and chromium, minerals, herbicides and pesticides such as carbendazin, oils, plant matter and infectious agents (fungal spores, bacteria). Added to that, opiates alone have immunomodulatory properties and can induce sepsis in laboratory animals.

Although there is much literature on infections in intravenous drug users, particularly about the large variety of unusual organisms, a MEDLINE® search did not reveal any reports of rapid septic or toxic shock after an intravenous load of foreign material with no organism detected as was the case in our patients. Specifically, we could not find any reports of complications from injected poppy seed tea.

The exact cause of our patients’ symptoms was not entirely clear. There were features of both sympathomimetic and opiate toxidromes as well as of distributive shock (anaphylaxis or sepsis). Septic emboli could have accounted for some of the presenting features, but no evidence of that was found as no cultures had any growth. Reactions to a parenteral foreign substance could account for many of the clinical features the patients exhibited. We believe that the clinical course was likely a combination of the above factors.

**Conclusion**

We present two nearly identical cases of injection of PST with dramatic and rapidly toxic effects, culminating in admissions to the intensive care unit. Fortunately for our cases they had the insight to call for help early, avoiding a potentially serious outcome.
Unfortunately for all involved they both expressed a desire to try this again, having “worked out what the problem was”, and one of them has represented to our ED in the interim with further opiate drug-seeking behaviour.

We have spoken to both on the phone to reiterate the danger of trying anything similar in the future. With the easy availability of poppy seeds, and groups of opiate-dependent people in most parts of the developed world, we can expect to see similar presentations in the future.

If anyone else has had any experience with patients using poppy seed tea intravenously, please share them via the correspondence details below.

Author information: Dominic Monaghan, Emergency Physician; Brad Peckler, Emergency Physician; Emergency Department, Wellington Hospital, Wellington

Correspondence: Dr Dominic Monaghan, Emergency Department, Wellington Hospital, Private Bag 7902, Wellington South, New Zealand. Email: mondocello@zoho.com

References:

5. EFSA Panel on Contaminants in the Food Chain (CONTAM); Scientific Opinion on the risks for public health related to the presence of opium alkaloids in poppy seeds. EFSA Journal. 2011;9(11):2405. [150 pp.].