

Get from Agitation to ‘oK’ Faster with Special K

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The call from EMS was for a psychotic patient who was ripping the siding off a neighbor's house with his bare hands. The medic who gave the report sounded distracted and a bit frightened. No response to intranasal midazolam, he said. They arrive, and you're immediately a bit frightened too.

The patient is built like an All-American linebacker, and his rippling musculature barely fits on the gurney. He is handcuffed and restrained on a backboard that bends with each of his freedom-seeking abdominal crunches. Blood trickles from his wrists, and you hear crunching from his mouth. He is actually *cracking* his own teeth, and attempting to spit them against his facemask. A few pockets of foam bubble out above his philtrum.

You note the diameter and superficiality of his mid-arm veins, wishing for access to an IV dart device, each vessel a prime target from across the room. Alas, sedation will start with the standard approach—a B52 of intramuscular haloperidol 5 mg/lorazepam 2 mg. The backboard is really creaking now. Could it actually snap? Boom, the B52 has landed. Minutes pass, the contorting, spitting, crunching, and grunting continue. It's just a matter of time before this patient seriously hurts himself or someone else. What next?

We've all had patients like this, but we'd like to thank our colleague Jason Nau, MD, for sharing this particular story. Like Dr. Nau, we would consider more Haldol and Ativan, droperidol, or RSI. There is no consensus on the best approach yet, but perhaps an old therapy is the key to safe sedation for the profoundly agitated.

The New Evidence

A constellation of new evidence suggests that ketamine (AKA Special K, Kit Kat, and Purple) might be an effective adjunct—primary or secondary—to treat agitated delirium.

An EMS study by Cole, et al., examined the safety and efficacy of



Lippincott Williams & Wilkins, 2014.

ketamine (minimum dose 3 mg/kg IM) versus that of haloperidol (minimum dose 5 mg IM) for patients with extreme agitation. (*Clin Toxicol* [Phila] 2016;54[7]:556.) Sixty-four of 146 patients received ketamine. The researchers found a difference of 12 minutes (95% CI 9-15 min) in median time to adequate sedation with ketamine. But there was a tradeoff—intubation rates (39% vs. 4%) and adverse event rates were far higher with ketamine, which included hypersalivation (38%), emergence reaction (10%), vomiting (9%), and laryngospasm (5%).

Another study by Riddell, et al., examined sedation strategy-specific outcomes on agitation levels in acutely agitated emergency department patients. (*Am J Emerg Med* 2017. doi: 10.1016/j.ajem.2017.02.026.) The study authors used a validated sedation scale to record sedation levels at zero, five, 10, and 15 minutes after the sedative was administered (medication and dose at providers' discretion). They also recorded the time to adequate sedation as judged by the treating provider, and performed retrospective chart review to assess adverse events (e.g., intubation), repeat/rescue dosing, and vital sign changes.

Their results illustrated a range of approaches to handling agitation in the ED. Ninety-eight patients were included, and 33 received lorazepam, 24 ketamine, 17 midazolam, 14 Haldol, and 10 some combination of these. Those receiving ketamine were significantly younger than those receiving other medications ($p=0.03$).

The authors reported significantly faster time to agitation resolution in the ketamine group compared with other treatments without significant differences in the need for medication redosing,

vital sign changes (except for midazolam, which was associated with lower pulse rate measurement), or adverse events. Two ketamine patients, along with one patient from each of the other sedation groups, were intubated.

This single-center study is limited by its high methamphetamine-using population, lack of randomization, and inadequate power to detect differences between drugs in adverse events, but it's useful when considering the study by Cole, et al., noted above. Together they present persuasive evidence that IM ketamine gets to “oK” much faster than other available options. Seconds matter in the midst of a tooth-crunching crisis. Would you try it?

The Trial and Verdict

We await the opportunity to try ketamine for agitation in our practice, and we doubt it will be too long before the chance arises. Let's return in the meantime to Dr. Nau's scenario and see how it played out.

Dr. Nau had recently listened to a podcast on the “chemical takedown” that recommended IM ketamine for those recalcitrant to standard therapy. With this in mind, he sent in a brave nurse, dodging spit, teeth, and blood, to administer 3 mg/kg of IM ketamine. Several minutes later, the board-creaking abated, and the crunching slowed. Within 10 minutes, the patient was resting comfortably and protecting his own airway. Within 45 minutes, he had reverted to a calm and insightful young man wondering where he had misplaced his dentist's phone number and expressing extreme regret. He had tried synthetic cannabinoids for the first time, and was quite certain that he wouldn't be circling back for another spin on the psychotic not-so-merry-go-round.

This case clearly worked out oK, but more regular use of ketamine in EMS and in the ED is still under investigation. A few of our ED colleagues at Kaiser Permanente have successfully used ketamine for extreme agitation, and it seems that the oK approach might protect you, your coworkers, and your patients via faster sedation in a pinch. Dr. Riddell summarized, “Ketamine is usually not the definitive treatment, but a much faster bridge to getting everyone safe and facilitating a good workup and treatment.” **EMN**



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