

Non-IV-administered medication just as effective in stopping seizures

EurekaAlert

CINCINNATI When seizures strike, the most immediate goal for caregivers is to get appropriate medication to the patient as quickly as possible to stop the seizing activity.

In a paper published in the June *Academic Emergency Medicine*, UC emergency medicine assistant professor Jason McMullan, MD, found that the best means of stopping status epilepticus (SE) may be with the least direct medication.

In the meta-analysis, McMullan compiled the results of six studies featuring 774 patients. His analysis compared the efficacy of two seizure medications, diazepam and non-intravenous midazolam, in stopping SE in children and young adults.

Both medications are in a class of drugs called benzodiazepines, with diazepam the more commonly used anti-seizure drug in pre-hospital settings. While diazepam is typically administered by either suppository or IV, midazolam can be administered by a shot in the muscle or intranasally.

In the minutes after a seizure, the method of administration can make a big difference, says McMullan.

"Establishing IV access can be challenging, if not impossible, in convulsing patients," he says. While an intravenous medication may access the bloodstream faster, it can take a long time before the patient actually gets the medicine.

"Suppositories present another challenge," adds McMullan, because some caregivers may be unwilling to administer a suppository to a seizing child in a public place.

"It may be a little bit slower for midazolam administered via shot or nasal spray to work," he says, "but when you factor in the time to start the IV or administer a suppository, then it becomes a lot quicker."

During a seizure, time saved often translates into a better outcome for the patient.

"Most seizures stop on their own, but there times that they don't—and when they don't, that's a true emergency," says McMullan. "If a person is seizing for five or more minutes, the chances of the seizure stopping on its own are far less. During that time the person can suffer brain damage, muscle damage, a lack of oxygen, kidney damage, any number of things. The sooner that person is treated, the better they're going to do and the less medicine that they need."

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In the analysis, McMullan found that midazolam, administered by any route, was superior to diazepam for stopping seizures, by any route. Not only was midazolam administered faster than diazepam, it had no greater rate of respiratory side effects.

While McMullan cautions that further studies including adult patients and comparing other anti-seizure medications are needed, he is optimistic about what this means for advancing the standard of care in seizures.

"In broad strokes, these results mean midazolam could be a good idea for seizure treatment. It's no worse than the gold standard of putting the drug directly into the bloodstream, it's no more dangerous and it's quicker. The real promise is that it may open the possibility for more EMS agencies to use this medication."

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