



PIC QUESTION OF THE WEEK: 2/21/2011

Q: Can midazolam be administered intranasally for the management of acute seizures?

A: Nearly 50% of patients affected with epilepsy suffered seizures during childhood. This chronic disorder is typically managed using a variety of anti-epileptic drugs (AEDs) with the ultimate goal of therapy being prevention of seizure recurrence. Many patients are refractory to standard AEDs and combination therapy and eventually develop breakthrough seizures that must be treated promptly and appropriately. Benzodiazepines decrease action potential and basically tranquilize the central nervous system. They are considered the agents of choice for the treatment of acute seizures. Diazepam and lorazepam are currently the most widely used medications for this indication and both may be administered intravenously in an emergency situation. In the management of seizures, medications must be administered as quickly and effectively as possible. Diazepam provides the option of rectal delivery which may be accomplished outside the hospital environment. This route of administration is effective, yet may be awkward for many patients and has led to the consideration of other treatment options. Midazolam (Versed®, etc.) is routinely used by the intravenous (IV) route for conscious sedation in surgical and dental procedures. The drug has also been administered IV and via the buccal route for status epilepticus. For several years, midazolam has been given *intranasally* to infants and young children prior to diagnostic and surgical procedures. This is generally accomplished using the IV dosage form. During the past few years, this method of administration has been evaluated for the treatment of seizures and status epilepticus. Intranasal midazolam produces a rapid onset of action with comparable efficacy to rectal diazepam. Dosage has ranged from 0.2-0.5 mg/kg with a maximum dose of 10 mg. In one clinical trial, 50 patients received home rescue medication with intranasal midazolam (0.2 mg/kg) while 42 others were treated with rectal diazepam (0.3-0.5 mg/kg). The group using intranasal midazolam experienced seizure cessation within 3.0 minutes of medication administration while response in the diazepam group was observed within 4.3 minutes. Caregivers were able to successfully administer the medications within 5 minutes of seizure onset. A recent meta-analysis comparing various dosage routes of administration concluded that non-IV (including intranasal use) midazolam was safe and effective for the treatment of status epilepticus when compared with non-IV (rectal) or IV diazepam. The approximate cost of a single dose of intranasal midazolam is approximately \$12 in comparison to an approximate \$212 charge for a single dose of rectal diazepam. Intranasal midazolam is a promising alternative treatment method for acute seizures and status epilepticus in children and young adults.

References:

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