

# An Alternative Route of Drug Administration in Acute Convulsions

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How to treat grand mal seizures when intravenous access has not yet been established is a problem frequently encountered. This is especially difficult in the pediatric population, where intravenous access can be a challenge even in the quiet, cooperative child. We report here our successful treatment of a seizing child by the intranasal administration of midazolam.

## Case Description

A 20 kg 5-year-old boy was rushed by his parents to our adult trauma unit. They reported a history of a persistent grand mal seizure that had begun a half-hour earlier. Attempts at intravenous cannulation by the staff were unsuccessful. An anesthesiologist who happened to be examining another patient suggested the use of intranasally administered droplets of midazolam. Within 2 minutes of the 5 mg dose (concentration 5 mg/ml), the child stopped convulsing. An intravenous line was established, and the child was referred to our pediatric colleagues for further management.

## Comment

Midazolam is a water-soluble benzodiazepine that was initially used as a short-acting sedative/premedicant. It has subsequently found the favor of

emergency room physicians as a treatment for convulsions. Usual routes of administration are oral, intravenous, intramuscular and rectal. Recently anesthesiologists have begun to make use of its water solubility/rapid absorption from mucous membranes and administer the drug intranasally as a reliable premedicant in children.

There are several reports in the literature on the use of midazolam in epilepsy. O'Regan et al. [1] found that intranasal administration of midazolam suppressed electroencephalographic evidence of epileptic activity in 15 of 19 children studied electively. Scott et al. [2] successfully treated 13 patients with sublingual midazolam in the setting of acute convulsions. Gizurarson and colleagues [3] found that intranasally administered midazolam may be "an effective alternative to intravenous administration in relief of seizures." Lahat et al. [4] also effectively treated 19 of 20 seizing children with intranasal midazolam. Our report further supports the beneficial result of intranasal midazolam on seizures.

In view of the known efficient absorption of midazolam from the nasal mucosa in children and its use in our patient (we regard this instance as

successful treatment, but have to consider the possibility of coincidental cessation of the seizures), we recommend this method of treatment as an alternative to intravenous/rectal administration in the setting of acute convulsions [3]. Usual safety standards of monitoring, intravenous access (as soon as possible), and availability of resuscitation equipment are recommended.

## References

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*The meek shall inherit the earth, but not the mineral rights*

*Paul J. Getty, American oil tycoon (1892-76)*