Intrapulmonary Midazolam for the Treatment of Seizures

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Technology description

Midazolam has previously been administered via a variety of routes, including the intranasal route, for the management of acute seizures. Researchers at the University of California, Davis researchers have demonstrated in rodent chemoconvulsant models that inhaled intrapulmonary (nebulized) midazolam can protect against seizures more rapidly and more potently than when administered by other routes. The lung is highly vascularized and the thin alveolar epithelium represents a large absorptive surface. Blood exiting the lung is delivered directly to the brain so that the seizure protection conferred by intrapulmonary midazolam occurs with very short latency. Unexpectedly, midazolam delivered via the lung is more potent than when administered by other routes, including intravenously.

Additional Information

ABSTRACT

Researchers at the University of California, Davis have developed a method for the intrapulmonary administration of midazolam to rapidly treat seizures.

Related Materials

Dhir A., Zolkowska D. and Rogawski M.A., Intrapulmonary Midazolam Protects Against Chemoconvulsant Seizures in Mice, American Epilepsy Society Abstracts (2010) Abst. 3.051

Additional Technologies by these Inventors

Edible Oils to Enhance the Absorption of Orally Administered Steroids Including Neurosteroids

Related Cases

2010-847-0

Application area

Treat seizures

Epilepsy therapy

Self abort a full-blown complex partial seizure or generalized convulsion when experiencing seizure aura
Prevent an impending seizure when a patient receives a warning from a seizure detection system
Out-of-hospital treatment of seizure clusters or status epilepticus where more rapid termination of seizure activity than is provided by intrarectal diazepam
Chemical threat agent induced seizures

Advantages

The pulmonary route offers advantages of speed, potency and ease of administration over other routes of delivery, including the intranasal and intravenous routes
Permits several new uses of midazolam in epilepsy therapy
Better neurological outcome
Better accepted by patients and caregivers than rectal delivery
System may be stockpiled for emergency treatment during mass exposure

Institution

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