Midazolam Injection, USP

PHARMACOTHERAPEUTIC CLASS

Midazolam is a benzodiazepine with anesthetic and sedative properties. It has muscle relaxant properties that are dose dependent.

MECHANISM OF ACTION

Midazolam is a potent agonist at the benzodiazepine receptor. It enhances the action of GABA (gamma-aminobutyric acid), the major inhibitory neurotransmitter in the brain, by increasing the probability of chloride ion conductance through the GABA-A receptor channel. This results in hyperpolarization of the neuron, leading to decreased neurotransmission and suppression of neuronal activity.

PHARMACOKINETICS

Midazolam is rapidly absorbed after intravenous, intramuscular, or sublingual administration. After intravenous administration, the mean peak plasma concentration is achieved within 3 to 5 minutes. Midazolam is extensively metabolized in the liver by CYP3A4 and CYP2C9 enzymes, with some contribution from CYP2C19. The major metabolites are 1-hydroxy-midazolam and 4-epi-midazolam. Midazolam and its metabolites are excreted in the urine and bile.

CLINICAL PHARMACOLOGY

Indications

Midazolam is used for preoperative sedation/anxiolysis/amnesia; intravenous for induction of general anesthesia; intravenous for procedural sedation; intravenous for the treatment of delirium tremens; and intravenous for the treatment of agitation in acutely confused patients.

Contraindications

Midazolam is contraindicated in patients with a known hypersensitivity to midazolam or any other benzodiazepine.

Precautions

Midazolam should be used with caution in patients with a history of drug abuse, chronic obstructive pulmonary disease, alcohol withdrawal syndrome, and hepatic impairment.

DOSAGE AND ADMINISTRATION

The usual recommended dose of midazolam for adults and children over 12 years of age is 1 to 3 mg intravenously or intramuscularly. The dose should be titrated based on the patient's response and the desired effect.

Pediatric Use

Doses of midazolam for pediatric patients should be calculated based on ideal body weight. When midazolam is administered intravenously for sedation/anxiolysis/amnesia following IV and IM administration, for induction of anesthesia following IV administration and for procedural sedation, the dose should be titrated based on the patient's response and the desired effect.

SIDE EFFECTS

The most common side effects of midazolam are drowsiness, sedation, and amnesia. Other potential side effects include respiratory depression, hypotension, and depression of the respiratory center.

INTERACTIONS

Midazolam interacts with other CNS depressants, opioids, and sedatives. Patients should be monitored closely for any potential interactions.

REFERENCES

For a comprehensive list of references, please refer to the full prescribing information for midazolam.