Diltiazem

Classification

Antianginal, antiarrythmic, antihypertensive, nondihydropyridine calcium channel blocker

Indications

- CCP: Atrial fibrillation or atrial flutter

Contraindications

Hypersensitivity to diltiazem or any component

Sick sinus syndrome (except in patients with a functioning artificial pacemaker)

Second- or third-degree AV block (except in patients with a functioning artificial pacemaker)

Severe hypotension or cardiogenic shock

Atrial fibrillation or atrial flutter associated with accessory conduction pathway (e.g., Wolff-Parkinson-White)

Ventricular tachycardia

Severe bradycardia

Pregnancy

Concurrent use with intravenous dantrolene

Adult dosages

- CCP: 0.25 mg/kg IV/IO to single maximum dose of 20 mg

Administer over 2 minutes undiluted, or in 5-10 mL normal saline

Pediatric Considerations And Dosing

Contact CliniCall / EPOS for dosing guidance

- Atrial tachyarrythmias: 0.25 mg/kg over 5 minutes (maximum 20 mg) followed by infusion of 0.05-0.15 mg/kg/hour.

Mechanism Of Action

Inhibits entry of calcium ions into "slow channels" of vascular smooth muscle and myocardium during depolarization, producing relaxation of coronary vasculature. Improves myocardial oxygen delivery in patients with vasospastic angina.

Pharmocokinetics

Intravenous:

- Onset: 3 minutes
- Duration: 1-3 hours following bolus; 0.5-1 hour after discontinuation of infusion

- Metabolism: hepatic
- Half-life: 3-4 hours following bolus; 4-5 hours following infusion

Adverse Effects

Common: Peripheral edema

Less common:

Cardiovascular: Bradycardia (3% to 4%), bundle branch block (<2%), cardiac arrhythmia (1%), cardiac failure (<2%), complete atrioventricular block (<2%), ECG abnormality (<2%), edema (2% to 3%), extrasystoles (2%), first-degree atrioventricular block (3% to 4%), hypotension (3% to 4%), lower extremity edema (5% to 8%), palpitations (1% to 2%), second degree atrioventricular block (<2%), syncope (<2%), vasodilation (2% to 3%)

Dermatologic: Pruritus (<2%), skin photosensitivity (<2%) (Ramirez 2007), skin rash (1% to 2%) (Tuchinda 2014)

Endocrine & metabolic: Albuminuria (<2%), gout (1% to 2%), gynecomastia (<2%), hyperglycemia (<2%), hyperuricemia (<2%), increased lactate dehydrogenase (<2%), increased thirst (<2%), weight gain (<2%)

Gastrointestinal: Abdominal swelling (2%), anorexia (<2%), constipation (<2%), diarrhea (1% to 2%), dysgeusia (<2%), dyspepsia (1% to 6%), nausea (2%), vomiting (<2%), xerostomia (<2%)

Genitourinary: Crystalluria (<2%), impotence (2%), nocturia (<2%), sexual difficulty (<2%)

Hematologic & oncologic: Petechia (<2%)

Hepatic: Increased serum alanine aminotransferase (<2%), increased serum alkaline phosphatase (<2%), increased serum aspartate transaminase (<2%)

Hypersensitivity: Hypersensitivity reaction (<2%)

Infection: Infection (1% to 6%)

Local: Burning sensation at injection site (≤4%), itching at injection site (≤4%)

Nervous system: Abnormal dreams (<2%), abnormal gait (<2%), amnesia (<2%), depression (<2%), dizziness (2% to 10%), drowsiness (<2%), fatigue (5%), hallucination (<2%), headache (2% to 8%), insomnia (<2%), nervousness (2%), pain (6%), paresthesia (<2%), personality changes (<2%)

Neuromuscular & skeletal: Asthenia (1% to 4%), increased creatine phosphokinase in blood specimen (<2%), muscle cramps (<2%), myalgia (2%), neck stiffness (<2%), osteoarthritis (<2%), tremor (<2%)

Ophthalmic: Amblyopia (<2%), conjunctivitis (2%), eye irritation (<2%)

Otic: Tinnitus (<2%)

Renal: Polyuria (<2%)

Respiratory: Bronchitis (1% to 4%), cough (1% to 2%), dyspnea (1% to 6%), epistaxis (<2%), flu-like symptoms (2%), paranasal sinus congestion (1% to 2%), pharyngitis (6%), rhinitis (<2%)

Source: Diltiazem. In: Lexicomp Online, UpToDate, Waltham, MA. (Accessed November 20, 2020.)

Warning And Precautions

May cause first-, second-, and third-degree AV block or sinus bradycardia.

Use with caution in patients with left ventricular dysfunction: due to negative inotropic effects, cardiac output may be adversely affected.

Drug Interactions

Avoid co-administration with beta blockers -- a significant decrease in myocardial contractility may develop, as well as significant bradycardia or AV block.