LIDOCAINE (Systemic)

Indications

Accepted

Arrhythmias, ventricular (treatment)¾Lidocaine (systemic) is indicated and is the drug of choice in the acute management of ventricular arrhythmias, such as those resulting from acute myocardial infarction, digitalis toxicity, cardiac surgery, or cardiac catheterization.

Mechanism of action/Effect:

Antiarrhythmic¾Lidocaine decreases the depolarization, automaticity, and excitability in the ventricles during the diastolic phase by a direct action on the tissues, especially the Purkinje network, without involvement of the autonomic system. Neither contractility, systolic arterial blood pressure, atrioventricular (AV) conduction velocity, nor absolute refractory period is altered by usual therapeutic doses. In the Vaughan Williams classification of antiarrhythmics, lidocaine is a class IB agent.

Precautions to Consider

Cross-sensitivity and/or related problems

Patients sensitive to other amide-type anesthetics or flecainide or tocainide may be sensitive to lidocaine also. Cross-sensitivity with procainamide or quinidine has not been reported.

Carcinogenicity/Mutagenicity

Long-term animal studies evaluating the carcinogenic or mutagenic potential of lidocaine have not been done. 4

Pregnancy/Reproduction

Pregnancy¾Lidocaine crosses the placenta. Adequate and well-controlled studies in humans have not been done.
Studies in rats given doses up to 6.6 times the maximum human dose have not shown that lidocaine causes adverse effects in the fetus. 4 However, lidocaine has been shown to constrict uterine arteries in sheep and in experimentally isolated uterine artery segments. 6 Furthermore, studies in sheep have shown that lidocaine causes significant increases in fetal blood pressure and increases or decreases in fetal heart rate related to the rate of lidocaine infusion. 7, 8

FDA Pregnancy Category B.

Breast-feeding

It is not known whether lidocaine is distributed into human breast milk. However, problems in humans have not been documented.

Pediatrics

Appropriate studies on the relationship of age to the effects of lidocaine have not been performed in the pediatric population. However, no pediatrics-specific problems have been documented to date.

Geriatrics

Elderly patients are more prone to the adverse effects of lidocaine. 5 In patients over 65 years of age, dose and rate of infusion should be reduced by one half and adjusted slowly as needed and tolerated. In addition, elderly patients are more likely to have age-related renal function impairment, which may require dosage adjustment.

Drug interactions and/or related problems

The following drug interactions and/or related problems have been selected on the basis of their potential clinical significance (possible mechanism in parentheses where appropriate)¾not necessarily inclusive (>> = major clinical significance):

Note: Combinations containing any of the following medications, depending on the amount present, may also interact with this medication.
Antiarrhythmics, other

(although some antiarrhythmic agents may be used in combination for therapeutic advantage, combined use may sometimes potentiate risk of adverse cardiac effects)

>> Anticonvulsants, hydantoin

(concurrent use with lidocaine may have additive cardiac depressant effects; hydantoin anticonvulsants may also promote increased hepatic metabolism of lidocaine, reducing its intravenous concentration)

Beta-adrenergic blocking agents, systemic and ophthalmic (if systemic absorption occurs)

(concurrent use may slow hepatic metabolism and increase the risk of toxicity of lidocaine because of reduced hepatic blood flow)

Cimetidine

(concurrent administration with lidocaine may result in reduced hepatic clearance of lidocaine, possibly resulting in delayed elimination and increased blood concentrations; monitoring of blood concentrations and clinical parameters as a guide to dosage is recommended)

Neuromuscular blocking agents

(effects may be potentiated when used concurrently with large doses [such as those over 5 mg per kg] of intravenous lidocaine)

Laboratory value alterations

The following have been selected on the basis of their potential clinical significance (possible effect in parentheses where appropriate)¾not necessarily inclusive (>> = major clinical significance):
With diagnostic test results

Bentiromide

(concurrent administration of lidocaine during a bentiromide test period will invalidate test results since lidocaine is also metabolized to arylamines and will thus increase the percent of PABA recovered; discontinuation of lidocaine at least 3 days prior to the administration of bentiromide is recommended)

Medical considerations/Contraindications

The medical considerations/contraindications included have been selected on the basis of their potential clinical significance (reasons given in parentheses where appropriate)¾ not necessarily inclusive (>> = major clinical significance).
Except under special circumstances, this medication should not be used when the following medical problems exist

>> Adams-Stokes syndrome or

>> Heart block, severe, including atrioventricular, intraventricular, or sinoatrial blocks

(heart block may be worsened)

Risk-benefit should be considered when the following medical problems exist

>> Congestive heart failure or

Hepatic function impairment or

>> Reduced hepatic blood flow or

Renal function impairment

(accumulation may occur; dose and rate of infusion should be reduced by one half)

>> Heart block, incomplete or

>> Hypovolemia and shock or

>> Sinus bradycardia or

>> Wolff-Parkinson-White syndrome

(may be aggravated)

Sensitivity to lidocaine

Side/Adverse Effects

Note: Adverse effects are dose- and age-related; incidence is increased in patients over 65 years of age. Adverse cardiovascular effects at therapeutic doses are rare, except in patients with existing compromised ventricular function. Cardiac conduction disturbances are extremely rare. High plasma lidocaine concentrations may lead to hypotension, arrhythmias, heart block, and respiratory and cardiac arrest.
The following side/adverse effects have been selected on the basis of their potential clinical significance (possible signs and symptoms in parentheses where appropriate)¾not necessarily inclusive:
Those indicating need for medical attention

Incidence rare

Allergic reaction (difficulty in breathing; itching; skin rash; swelling of skin)
Those indicating need for medical attention only if they continue or are bothersome

Incidence less frequent or rare

Pain at site of injection¾with prolonged intravenous use
Incidence dose-related

With serum lidocaine concentrations of 1.5 to 6 mcg/mL

Anxiety or nervousness; dizziness; drowsiness; feelings of coldness, heat, or numbness