nimodipine (nye-moe-di-peen)

Classification
Therapeutic: subarachnoid hemorrhage therapy agents
Pharmacologic: calcium channel blockers

Pregnancy Category C

Indications
Management of subarachnoid hemorrhage.

Action
Inhibits the transport of calcium into vascular smooth muscle cells, resulting in inhibition of excitation-contraction coupling and subsequent contraction. Potent peripheral vasodilator.

Therapeutic Effects:
Prevention of vascular spasm after subarachnoid hemorrhage, resulting in decreased neurologic impairment.

Pharmacokinetics
Absorption: Well absorbed following oral administration but extensively metabolized, resulting in poor bioavailability.

Distribution: Crosses the blood-brain barrier; remainder of distribution unknown.

Protein Binding: 95%.

Metabolism and Excretion: Mostly metabolized by the liver; 10% excreted unchanged by kidneys.

Half-life: 1–2 hr.

TIME/ACTION PROFILE (vasodilation)
ROUTE ONSET PEAK DURATION
PO unknown 1 hr 4 hr

Contraindications/Precautions
Contraindicated in: Hypersensitivity; Hypotension (SBP/DBP < 90 mm Hg; Concurrent use of strong CYP3A4 inhibitors [↓ risk of hypotension]); Concurrent use of strong CYP3A4 inducers [↓ efficacy].

Adverse Reactions/Side Effects

Interactions
Drug-Drug: Strong CYP3A4 inhibitors, including clarithromycin, itraconazole, ketoconazole, nelfinavir, ritonavir, saquinavir, boceprevir, telaprevir, ketoconazole, itraconazole, posaconazole, voriconazole, may ↑ levels and the risk of hypotension; avoid concurrent use. Strong CYP3A4 inducers, including carbamazepine, phenobarbital, phenytoin, rifampin, may ↓ levels and effects; avoid concurrent use. Additive hypotension may occur when used concurrently with fentanyl, other antihypertensives, nitrates, acute ingestion of alcohol, or quinidine.

Drug-Natural Products: St. John's wort may ↓ levels and effect; avoid concurrent use.

Drug-Food: Grapefruit and grapefruit juice may ↓ levels and effect; avoid concurrent use.

Route/Dosage
PO (Adults): 60 mg every 4 hr for 21 days; therapy should be started within 96 hr of subarachnoid hemorrhage.

Hepatic Impairment
PO (Adults): 30 mg every 4 hr for 21 days; therapy should be started within 96 hr of subarachnoid hemorrhage.

Use Cautionally in: Severe hepatic impairment (dose ↓ recommended). Severe renal impairment. History of serious ventricular arrhythmias or HF. Lactation: Sedative effects may occur in nursing infants.

Pediatric Use: Safety not established; Geri: Dose ↓ recommended due to ↑ risk of hypotension.
NURSING IMPLICATIONS

Assessment

- Assess patient's neurologic status (level of consciousness, movement) prior to and periodically following administration.
- Monitor BP and pulse prior to therapy and periodically during therapy.
- Monitor intake and output ratios and daily weight. Assess for signs of HF (peripheral edema, rales/crackles, dyspnea, weight gain, jugular venous distention).
- Assess for rash periodically during therapy. May cause Stevens-Johnson syndrome. Discontinue therapy if severe or if accompanied with fever, general malaise, fatigue, muscle or joint aches, blisters, oral lesions, conjunctivitis, hepatitis and/or eosinophilia.
- Lab Test Considerations: Total serum calcium concentrations are not affected by calcium channel blockers.
- Monitor serum potassium periodically. Hypokalemia risk of arrhythmias; should be corrected.
- Monitor renal and hepatic functions periodically. Several days of therapy may cause hepatic enzymes, which return to normal upon discontinuation of therapy.
- May occasionally cause platelet count.

Potential Nursing Diagnoses

Ineffective tissue perfusion (Indications)

Implementation

- Do not confuse nimodipine with nicardipine or nifedipine.
- Begin administration within 96 hr of subarachnoid hemorrhage and continue every 4 hr for 21 consecutive days.
- Administer by PO route only; when administered IV or parenterally, may cause serious adverse events, including death.
- PO: If patient is unable to swallow capsule, make a hole in both ends of capsule with a sterile 18-gauge needle and extract the contents into a syringe. Empty contents into water or nasogastric tube and flush with 30 mL normal saline.
- Administer oral solution 1 hr before or 2 hr after meals. For administration via NG or gastric tube, administer via syringe included, then refill syringe with 20 mL of 0.9% saline water solution, flush remaining contents from NG or gastric tube into stomach.

Patient/Family Teaching

- Advise patient to take medication as directed, even if feeling well. Take missed doses as soon as possible unless almost time for next dose; do not double doses. May need to be discontinued gradually.
- Advise patient to avoid grapefruit or grapefruit juice during therapy.
- Gastric patients to change positions slowly to minimize orthostatic hypotension.
- May cause dizziness or dizziness. Advise patient to avoid driving or other activities requiring alertness until response to medication is known.
- Instruct patient to notify health care professional of all Rx or OTC medications, vitamins, or herbal products being taken and to avoid concurrent use of alcohol or OTC medications and herbal products, especially cold preparations, without consulting health care professional.
- Advise patient to notify health care professional if rash, irregular heartbeats, dizziness, swelling of hands and feet, pronounced dizziness, nausea, constipation, or hypotension occurs or if headache is severe or persistent.
- Caution patient to wear protective clothing and use sunscreen to prevent photosensitivity reactions.
- Advise female patient to notify health care professional if pregnancy is planned or suspected or if breast feeding.

Evaluation/Desired Outcomes

- Improvement in neurologic deficits due to vasospasm following subarachnoid hemorrhage.

Why was this drug prescribed for your patient?