pyridoxine (peer-i-dox-een)

Beesix, Doxine, Nestrex, Pyri, Rodex, Vitabee 6, vitamin B6

Classification
Therapeutic: vitamins
Pharmacologic: water-soluble vitamins

Pregnancy Category A

Indications
Treatment and prevention of pyridoxine deficiency (may be associated with poor nutritional status or chronic debilitating illnesses). Treatment of pyridoxine-dependent seizures in infants. Treatment and prevention of neuropathy, which may develop from isoniazid, penicillamine, or hydralazine therapy. Management of isoniazid overdose >10 g.

Action
Required for amino acid, carbohydrate, and lipid metabolism. Used in the transport of amino acids, formation of neurotransmitters, and synthesis of heme. Therapeutic Effects: Prevention of pyridoxine deficiency. Prevention or reversal of neuropathy associated with hydralazine, penicillamine, or isoniazid therapy.

Pharmacokinetics
Absorption: Well absorbed from the GI tract.
Distribution: Stored in liver, muscle, and brain. Crosses the placenta and enters breast milk.
Metabolism and Excretion: Converted in RBCs to pyridoxal phosphate and other active metabolites. Amounts in excess of requirements are excreted unchanged by the kidneys.
Half-life: 15–20 days.

Contraindications/Precautions
Contraindicated in: Hypersensitivity to pyridoxine or any component.
Use Cautiously in: Parkinson's disease (treatment with levodopa only). OB: Chronic ingestion of large doses may produce pyridoxine-dependency syndrome in newborns.

Adverse Reactions/Side Effects
Adverse reactions listed are seen with excessive doses only. Neuromuscular: sensory neuropathy, paresthesia. Misc: pyridoxine-dependency syndrome.

Interactions
Drug-Drug: Interferes with the therapeutic response to levodopa when used without carbidopa. Requirements are increased by isoniazid, hydralazine, chloramphenicol, penicillamine, estrogens, and immunosuppressants. Decreases serum levels of phenobarbital and phenytoin.

Route/Dosage

 Prevention of Deficiency (Recommended Daily Allowance)
PO (Adults and Children <14 yr): 1.2–1.7 mg/day (larger doses required with cycloserine, ethionamide, hydralazine, immunosuppressants, isoniazid, penicillamine, and estrogen-containing oral contraceptives).
PO (Children 9–13 yr): 1 mg/day (larger doses required with cycloserine, ethionamide, hydralazine, immunosuppressants, isoniazid, and penicillamine).
PO (Children 1–8 yr): 0.5–0.6 mg/day (larger doses required with cycloserine, ethionamide, hydralazine, immunosuppressants, isoniazid, and penicillamine).
PO (Infants 6–12 mo): 0.1 mg/day.
PO (Infants <6 mo): 0.1 mg/day.

Treatment of Deficiency
PO (Adults): 1.5–10 mg/day until clinical signs are corrected; then 2–5 mg/day.
PO (Children): 0.5–2.5 mg/kg for 2 weeks, then 0.25–0.5 mg/kg weekly.

Pyridoxine-Dependent Seizures
PO, IM, IV (Neonates and Infants): 50–100 mg initially then 50–100 mg/day orally.

TIME/ACTION PROFILE
ROUTE ONSET PEAK DURATION
PO, IM, IV unknown unknown unknown

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Drug-Induced Neuritis

PO (Adults): Treatment—100–300 mg/day; Prophylaxis—25–100 mg/day.
PO (Children): Treatment—10–50 mg/day; Prophylaxis—1–2 mg/kg/day.

Isoniazid Overdose (>1 g)
IM, IV (Adults and Children): Amount in mg equal to amount of isoniazid ingested given as 1–4 g IV, then 1 g q 30 min.

NURSING IMPLICATIONS
Assessment

- Assess patient for signs of vitamin B6 deficiency (anemia, dermatitis, cheilosis, irritability, seizures, nausea, and vomiting) before and periodically throughout therapy. Institute seizure precautions in pyridoxine-dependent infants.
- Lab Test Considerations: May cause false elevations in urobilinogen concentrations.

Potential Nursing Diagnoses

- Imbalanced nutrition: less than body requirements (Indications)
- Potential Nursing Diagnoses

Implementation

- Because of infrequency of single B-vitamin deficiencies, combinations are commonly administered.
- Administration of parenteral vitamin B6 is limited to patients who are NPO or who have nausea and vomiting or malabsorption syndromes.
- Protect parenteral solution from light; decomposition will occur.
- PO: Extended-release capsules and tablets should be swallowed whole, without crushing, breaking, or chewing. For patients unable to swallow capsules, contents of capsules may be mixed with jam or jelly.
- IM: Rotate sites; burning or stinging at site may occur.
- IV: May be administered slowly by direct IV or as infusion in standard IV solutions.
- Pyridoxine-dependent seizures should cease within 2–3 min of IV administration.
- Additive Incompatibility: alkaline solutions, riboflavin.

Patient/Family Teaching

- Instruct patient to take medication as directed. If a dose is missed, it may be omitted because an extended period of time is required to become deficient in vitamin B6.
- Encourage patient to comply with diet recommended by health care professional. Explain that the best source of vitamin B6 is a well-balanced diet with foods from the four basic food groups. Foods high in vitamin B6 include bananas, whole-grain cereals, potatoes, lima beans, and meats.
- Patients self-medicating with vitamin supplements should be cautioned not to exceed RDA. The effectiveness of megadoses for treatment of various medical conditions is unproved and may cause side effects, such as constipation, numbness in feet, and difficulty with hand coordination.
- Emphasize the importance of follow-up examination to evaluate progress.

Evaluation/Desired Outcomes

- Decrease in the symptoms of vitamin B6 deficiency.
- Why was this drug prescribed for your patient?