allopurinol (al-oh-pure-i-nole)

Classifications: Antigout agent, antihyperuricemics

Pharmacologic: Xanthine oxidase inhibitors

Pregnancy Category: C

Indications:
- PO: Prevention of attacks of gouty arthritis and nephropathy.
- PO, IV: Treatment of secondary hyperuricemia, which may occur during treatment of tumors or leukemias.

Action:
- Allopurinol inhibits the production of uric acid by inhibiting the action of xanthine oxidase.

Therapeutic Effects:
- Lowering of serum uric acid levels.

Pharmacokinetics:
- Absorption: Well absorbed (80%) following oral administration.
- Distribution: Widely distributed in tissue and breast milk.
- Protein Binding: 1%.
- Metabolism and Excretion: Metabolized to oxypurinol, an active compound with a long half-life. 12% excreted unchanged, 76% excreted as oxypurinol.
- Half-life: 1–3 hr (oxypurinol 18–30 hr).

TIME/ACTION PROFILE (hypouricemic effect)

<table>
<thead>
<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
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<tbody>
<tr>
<td>PO</td>
<td>1–2 days</td>
<td>1–2 wk</td>
<td>1–3 wk†</td>
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†Duration after discontinuation of allopurinol

Contraindications/Precautions:
- Contraindicated in: Hypersensitivity.
- Use Cautiously in: Acute attacks of gout; Renal insufficiency (dose reduced if CCr 20 mL/min); Dehydration (adequate hydration necessary); OB, Lactation: Rarely used; Geri: Begin at lower end of dosage range.

Adverse Reactions/Side Effects:
- CV: Hypotension, flushing, hypertension, bradycardia, and heart failure (reported with IV administration).
- CNS: Drowsiness.
- GI: Diarrhea, hepatitis, nausea, vomiting.
- GU: Renal failure, hematuria.
- Derm: Rash (discontinue drug at first sign of rash), urticaria.
- Hemat: Bone marrow depression.
- Other: Hypersensitivity reactions.

Interactions:
- Drug-Drug: Use with mercaptopurine or azathioprine with bone marrow depressant properties—doses of these drugs should be reduced. Use with aminosalicylates, risk of rash. Use with oral hypoglycemic agents and warfarin, risk of hypoglycemia and hemorrhage.

Route/Dosage

Management of Gout
- PO (Adults and Children ≥10 yr): Initially—100 mg/day, titrated to serum uric acid levels. Doses of 300 mg/day should be given in divided doses; Maintenance dose—100–200 mg 2–3 times daily. Doses of ≥300 mg may be given as a single daily dose.

Management of Secondary Hyperuricemia
- PO (Adults and Children ≥10 yr): 600–800 mg/day in 2–3 divided doses starting 1–2 days before chemotherapy or radiation.
- PO (Children 6–10 yr): 10 mg/kg/day in 2–3 divided doses (maximum 800 mg/day) or 300 mg/daily in 2–3 divided doses.
- PO (Children <6 yr): 15 mg/kg/day in 2–3 divided doses (maximum 800 mg/day) or 150 mg/daily in 1 divided dose.
- IV (Adults and Children ≥10 yr): 200–400 mg/m²/day (up to 600 mg/day) as a single daily dose or in divided doses q 12–24 hr.
- IV (Children <10 yr): 200 mg/m² initially as a single daily dose or in divided doses q 12–24 hr (maximum dose 600 mg/day).
2 Renal Impairment
 (Adults and Children): CO > 50 mL/min — dose to 50% of recommended.
 CO ≤ 30 mL/min — dosage is 50% of recommended.

NURSING IMPLICATIONS

Assessment
- Monitor intake and output ratios. Decreased kidney function can cause diuresis.
- Serum uric acid levels usually begin to rise 2–3 days after initiation of oral therapy.
- Monitor blood glucose in patients receiving oral hypoglycemic agents. May cause hypoglycemia.
- Monitor for joint pain and swelling. Addition of colchicine or NSAIDs may continue permanently.
- Monitor for signs of rash or more severe hypersensitivity reactions. Discontinue allopurinol immediately if rash occurs. Therapy may be reinitiated after a mild reaction has subsided, at a lower dose (50 mg/day with very gradual titration). If skin rash recurs, discontinue permanently.
- Monitor hematologic, renal, and liver function tests before and periodically during therapy, especially during the first 3–6 mo of therapy because of an increased frequency of acute attacks of gouty arthritis during early therapy.
- CBC and platelets may indicate bone marrow depression.
- BUN, serum creatinine, and CCr may indicate nephrotoxicity. Ensure that patient maintains adequate fluid intake (minimum 2500–3000 mL/day) to minimize risk of kidney stone formation.
- Monitor for joint pain and swelling. These are usually reversed with discontinuation of therapy.
- Monitor intake and output ratios. Decreased kidney function can cause drug accumulation and toxic effects. Ensures that patient maintains adequate fluid intake (minimum 2500–3000 mL/day) to minimize risk of kidney stone formation.
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Potential Nursing Diagnoses

Nursing Diagnosis

Implementation

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allopurinol

Day. If dosing schedule is more than once a day, take up to 300 mg for the next dose.

- Instruct patient to continue taking allopurinol along with an NSAID or colchicine during an acute attack of gout. Allopurinol helps prevent, but does not relieve, acute gout attacks.
- Alkaline diet may be ordered. Urinary acidification with large doses of vitamin C or other acids may increase kidney stone formation. Advise patient of need for increased fluid intake.
- May occasionally cause drowsiness. Caution patients avoid driving or other activities requiring alertness until response to drug is known.
- Instruct patients to report skin rash, blood in urine, or influenza symptoms (chills, fever, muscle aches and pains, nausea, or vomiting) to health care professional immediately. These may indicate hypersensitivity.
- Advise patient that large amounts of alcohol increase uric acid concentration and may decrease the effectiveness of allopurinol.
- Emphasize the importance of follow-up exams to monitor effectiveness and side effects.

Evaluation/Desired Outcomes

- Decreased serum and urinary uric acid levels. May take 2–6 wk to observe clinical improvement in patients treated for gout.

Why was this drug prescribed for your patient?