atenolol

Apo-Atenolol, Novo-Atenol, Tenormin

Pharmacologic class: Beta-adrenergic blocker (selective)

Therapeutic class: Antianginal, antihypertensive

Pregnancy risk category D

Action

Selectively blocks $beta_1$-adrenergic receptors (myocardial); decreases cardiac output, peripheral resistance, and myocardial oxygen consumption. Also depresses renin secretion without affecting $beta_2$-adrenergic receptors (pulmonary, vascular, uterine).

Availability

Injection: 5 mg/10 ml
Tablets: 25 mg, 50 mg, 100 mg

Indications and dosages

➢ Hypertension

Adults: Initially, 50 mg P.O. once daily, increased to 100 mg after 7 to 14 days if needed

➢ Angina pectoris

Adults: Initially, 50 mg P.O. once daily, increased to 100 mg after 7 days if needed. Some patients may require up to 200 mg daily.

➢ Acute myocardial infarction

Adults: Initially, 5 mg I.V. over 5 minutes, followed by 5 mg I.V. 10 minutes later; 10 minutes after last I.V. dose, give 50-mg tablet P.O., then give 50 mg P.O. in 12 hours. Maintenance dosage is 100 mg P.O. daily or 50 mg b.i.d. for 6 to 9 days.

Dosage adjustment

- Renal impairment
- Elderly patients

Contraindications

- Cardiogenic shock
- Sinus bradycardia
- Greater than first-degree heart block

Administration

If apical pulse is below 60 beats/minute, withhold dose and call prescriber.

- Mix I.V. dose with dextrose or sodium chloride injection solution.
- For I.V. use, administer slowly (no faster than 1 mg/minute).
- Use I.V. solution within 48 hours of mixing.
- Don't discontinue drug suddenly; instead, taper dosage over 2 weeks.

Route	Onset	Peak	Duration
P.O.	1 hr	2 hr	24 hr
I.V.	5 min	5 min	12 hr

Adverse reactions

CNS: fatigue, lethargy, vertigo, drowsiness, dizziness, depression, disorientation, short-term memory loss

CV: hypertension, intermittent claudication, cold arms and legs, orthostatic hypotension, **bradycardia, heart failure, cardiogenic shock, myocardial reinfarction, arrhythmias**

EENT: blurred vision, dry eyes, eye irritation, conjunctivitis, stuffy nose, rhinitis, pharyngitis, **laryngospasm**

GI: nausea, vomiting, diarrhea, constipation, gastric pain, flatulence, anorexia, **ischemic colitis, retroperitoneal fibrosis, acute pancreatitis, mesenteric arterial thrombosis**

GU: impotence, decreased libido, dysuria, nocturia, Peyronie's disease, **renal failure**

Hematologic: agranulocytosis

Hepatic: elevated alanine aminotransferase (ALT) and aspartate aminotransferase (AST) levels, **hepatomegaly**

Metabolic: hypoglycemia, increased lactate dehydrogenase level

Musculoskeletal: muscle cramps, back and joint pain
Respiratory: dyspnea, wheezing, respiratory distress, **bronchospasm, bronchial obstruction, pulmonary emboli**
Other: fever, decreased exercise tolerance, allergic reaction, fever, development of antinuclear antibodies, hypersensitivity reaction

Interactions

Drug-drug. *Amiodarone, cardiac glycosides, diltiazem, verapamil:* increased myocardial depression, causing excessive bradycardia and heart block
Amphetamines, cocaine, ephedrine, norepinephrine, phenylephrine, pseudoephedrine: excessive hypertension, bradycardia
Ampicillin, calcium salts: decreased antihypertensive and antianginal effects
Aspirin, bismuth subsalicylate, magnesium salicylate, nonsteroidal anti-inflammatory drugs: decreased antihypertensive effect
Clonidine: life-threatening blood pressure increase after clonidine withdrawal or after simultaneous withdrawal of both drugs
Dobutamine, dopamine: decrease in beneficial beta-cardiovascular effects
Lidocaine: increased lidocaine levels, greater risk of toxicity
Monoamine oxidase inhibitors: bradycardia
Prazosin: increased risk of orthostatic hypotension
Reserpine: increased hypotension, marked bradycardia
Theophylline: decreased theophylline elimination
Drug-diagnostic tests. *Alkaline phosphatase, ALT, AST, antinuclear antibody titers, blood urea nitrogen, creatinine, lactate dehydrogenase, platelets, potassium, uric acid:* increased levels
Glucose: increased or decreased level
Insulin tolerance test: false results
Drug-behaviors. *Alcohol use:* increased hypotension

Precautions

Use cautiously in:
- renal failure, hepatic impairment, pulmonary disease, diabetes mellitus, thyrotoxicosis
- pregnant or breastfeeding patients
- children.

Patient monitoring

- Watch for signs and symptoms of hypersensitivity reaction.
- Monitor vital signs (especially blood pressure), electrocardiogram, and exercise tolerance.
- Check closely for hypotension if patient is receiving hemodialysis.
- Monitor blood glucose level regularly if patient is diabetic; drug may mask signs and symptoms of hypoglycemia.

Patient teaching

- Instruct patient to immediately report signs and symptoms of allergic response, breathing problems, and chest pain.
- Caution patient to avoid driving and other hazardous activities until he knows how drug affects concentration and alertness.
- Teach patient to take drug at same time every day.
- Inform patient that he may experience serious reactions if he stops taking drug suddenly. Advise him to consult prescriber before discontinuing drug.
- Tell patient that drug may cause a temporary blood pressure decrease if he stands or sits up suddenly. Teach him to rise slowly and carefully.
- Inform women that drug can't be taken during pregnancy; urge them to report planned or suspected pregnancy.
- Tell men that drug may cause erectile dysfunction (impotence); advise them to discuss this issue with prescriber.