tenecteplase  (te-neck-te-place)

TNKase

Classification
Therapeutic: thrombolytics
Pharmacologic: plasminogen activators

Pregnancy Category C

Indications
Reduction of mortality associated with acute myocardial infarction.

Action
Converts plasminogen to plasmin, which is then able to degrade fibrin present in clots. Directly activates plasminogen.

Therapeutic Effects:
Lysis of thrombi in coronary arteries, with preservation of myocardium and resultant decrease in mortality.

Pharmacokinetics
Absorption: IV administration results in complete bioavailability.
Distribution: Unknown.
Metabolism and Excretion: Mostly metabolized by the liver.
Half-life: Initial phase—20–24 min; terminal phase—90–130 min.
TIME/ACTION PROFILE (fibrinolysis)

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<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
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<tr>
<td>IV</td>
<td>rapid</td>
<td>unknown</td>
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Contraindications/Precautions
Contraindicated in:
- Active internal bleeding. History of cerebrovascular accident. Recent (within 2 mo) intracranial or intraspinal surgery or trauma; Intracranial neoplasm, arteriovenous malformation, or aneurysm; Severe uncontrolled hypertension.
- Known bleeding diathesis.

Use Cautiously in:
- Recent major surgery, trauma, GI, or GU bleeding; Cerebrovascular disease; Hypertension (BP ≥180 mm Hg and or diastolic ≥110 mm Hg); Presence or high likelihood of left heart thrombus; Subacute bacterial endocarditis or acute pericarditis. Hemostatic defect especially those associated with severe hepatic or renal disease; Severe hepatic dysfunction; Geriatric patients (increased risk of intracranial bleeding); Hemorrhagic ophthalmic conditions; Septic phlebitis or occluded AV catheter at injection site.

Adverse Reactions/Side Effects
CV:
- Arrythmias, cardiogenic shock, cardiac tamponade, embolism, heart failure, mitral valve insufficiency, intellectual impairment, myoccardial infarction, pulmonary edema, stroke, toxic shock syndrome, thrombosis, hypotension, MI, nausea, vomiting.

Hemat:
- Bleeding.

Interactions
Drug-Drug: Aspirin, NSAIDs, warfarin, heparin and heparin-like agents, abciximab, eptifibatide, tirofiban, clopidogrel, ticlopidine, or dipyridamole—concurrent use may increase the risk of bleeding, although these agents are frequently used together or in sequence. Risk of bleeding may be increased by concurrent use of sulfonamides, cephalosporins, or valproic acid.

Route/Dosage
IV (Adults ≥60 kg): 30 mg.
IV (Adults 60 kg and ≤70 kg): 35 mg.
IV (Adults 70 kg and ≥80 kg): 40 mg.
IV (Adults 80 kg and ≥90 kg): 45 mg.
IV (Adults ≥90 kg): 50 mg.

NURSING IMPLICATIONS
Assessment
- Begin therapy as soon as possible after the onset of symptoms.
- Assess patients for bleeding every 15 min during the 1st hr, every 15–30 min during the next 8 hr and at least every 4 hr for the duration of therapy. Frank bleeding may occur from invasive sites or body orifices. Internal bleeding may also occur (decreased neurologic status, abdominal pain with coffee-ground emesis or black tarry stools, joint pain). If uncontrolled bleeding occurs, stop tenecteplase immediately.

- Monitor vital signs, including temperature, every 4 hr during course of therapy. Do not use lower extremities to measure BP. Notify health care professional if sys-
tolic BP of 180 mmHg or diastolic BP of 110 mmHg. Tenecteplase should not be given if hypertension is uncontrolled. Inform health care professional if hypotension occurs. Hypotension may result from the drug, hemorrhage, or cardiogenic shock.

Assess neurologic status throughout therapy. Altered sensorium or mental changes may be indicative of intracranial bleeding.

Coronary Thrombosis: Monitor ECG continuously in patients with coronary thrombosis for significant arrhythmias. Antiarrhythmics may be ordered prior to or during alteplase therapy to prevent reperfusion arrhythmias. Cardiac enzymes should be monitored. Coronary angiography or radionuclide myocardial scanning may be useful to assess effectiveness of therapy.

Assess intensity, character, location, and radiation of chest pain. Note presence of associated symptoms (nausea, vomiting, diaphoresis). Administer analgesics as ordered by physician. Notify health care professional if chest pain is unrelieved or recurs.

Monitor heart and breath sounds frequently. Inform health care professional of signs of HF (rales/crackles, dyspnea, S3 heart sound, jugular venous distention, elevated CVP).

Lab Test Considerations: Monitor hematocrit, hemoglobin, platelet count, prothrombin time, thrombin time, activated partial thromboplastin time, and fibrinolytic activity prior to and frequently throughout therapy. Blood pressure may be assessed prior to change of patient has received platelet aggregation inhibitors.

Obtain type and crossmatch of blood and have blood available at all times in case of hemorrhage.

Stools should be tested for occult blood loss and urine tested for hematuria periodically during therapy.

Acetaminophen may be ordered to control fever.

Implementation

High Alert: Overdosage and under-dosage of thrombolytic medications have resulted in patient harm and/or death. Have second practitioner independently check original order, dosage calculations, and infusion pump settings. Do not confuse the abbreviation t-PA for alteplase (Activase) with the abbreviation TNK t-PA for tenecteplase (TNKase). Clearly order that contain either of these abbreviations.

Tenecteplase should be used only in settings where hematologic function and clinical response can be adequately monitored. Avoid IM injections and unnecessary transfusions. Apply pressure to all arterial and venous puncture sites for at least 5 min. Avoid punctures at noncompressible sites (e.g., popliteal, subclavian sites).

Avoid invasive procedures, such as IV injections or arterial punctures, with this therapy. If such procedures must be performed, apply pressure to all arterial and venous puncture sites for at least 5 min. Avoid punctures at noncompressible sites (e.g., popliteal, subclavian sites).

Systemic anticoagulation with heparin is usually begun several hours after the completion of thrombolytic therapy.

Acetaminophen may be ordered to control fever.

IV Administration

pH: 7.3.

Prior to therapy start two IV lines: one for tenecteplase, the other for any additional IV infusions.

Intermittent Infusion: Diluent: Vials are packaged with sterile water for injection. Do not discard shield assembly. To reconstitute aseptically withdraw 10 mL of diluent and inject into the tenecteplase vial, directing the stream into the powder. Slight foaming may occur; large bubbles will dissipate if left standing undisturbed for several minutes. Briefly gently until contents are completely dissolved, do not shake. Solution containing 5 mg/mL is clear and colorless to pale yellow. Withdraw dose from reconstituted vial with the syringe and discard unused portion (with green side down) and properly recycle the red hub cannula. Remove the entire shield assembly, including the red hub cannula, by twisting counter clockwise. Shield assembly also contains the clear-ended blunt plastic cannula; retain for future use.

Potential Nursing Diagnoses

Acute pain

Ineffective tissue perfusion (Indications)

Risk for injury, high risk for (Adverse Reactions)

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CONTINUED
tenecteplase

Split septum IV access. Reconstitute immediately before use. May be refrigerated and administered within 6 hrs. Rate: Administer as a single IV bolus over 5 seconds.

Y-Site Incompatibility: Precipitate forms in line when administered with dextrose-containing solutions. Flush line with saline-containing solution prior to and following administration of tenecteplase.

Additive Incompatibility: Do not admix.

Patient/Family Teaching

● Explain to patient and family the purpose of tenecteplase and the need for close monitoring.

● Advise patient to remain on bed rest and to avoid unnecessary procedures such as shaving and vigorous toothbrushing for 24 hrs.

● Instruct patient to report signs of hypersensitivity and bleeding promptly.

Evaluation/Desired Outcomes

● Restoration of coronary perfusion resulting in limitation of infarct size and decrease in complications, such as mortality.

Why was this drug prescribed for your patient?