

Alteplase

Alteplase (tPA) is a thrombolytic medication that dissolves blood clots by fibrinolysis. Known as a "clot buster," this medication is similar to naturally occurring enzyme human tissue plasminogen activator (tPA) that breaks down the fibrin found in blood clots. Since this drug disrupts normal coagulation, alteplase is contraindicated in patients with a history of bleeding. Avoid injections, invasive procedures, and the administration of anticoagulants and antiplatelets. Amicar may be given as an antidote to prevent bleeding.



PLAY PICMONIC

Mechanism

Tissue Plasminogen Activator

[Tissue-box Plastic-man-jam](#)

Alteplase functions as a fibrinolytic medication by converting plasminogen into the enzyme plasmin. Plasmin breaks down blood clots by destroying fibrin structure and therefore dissolving the blood clot.

Indications

Thrombosis

[Trombones](#)

As a thrombolytic, alteplase breaks down an already-formed thrombus or blood clot and is used in acute situations. The formation of a blood clot within a blood vessel or within the heart may obstruct normal blood flow and tissue perfusion. The thrombus may result in acute myocardial infarction, acute ischemic stroke, or acute pulmonary embolism. In addition, this drug may be given to dissolve a thrombus causing central venous catheter (CVC) blockage.

Side Effects

Bleeding

[Bleeding](#)

The patient receiving alteplase should be closely monitored for signs of bleeding or hemorrhage. The activation of plasmin may disrupt coagulation and prevent future clot formation required for vasculature injury.

Contraindications

Intracranial Hemorrhage

[In-head Hemorrhage-hammer](#)

Alteplase should not be given to patients with a history of intracranial hemorrhage, because its mechanism prevents clot formation and potentiates the risk of hemorrhage.

Internal Hemorrhaging

Internal Hemorrhage-hammer

Since bleeding is a major complication of alteplase, do not give this medication to a patient with a history of internal bleeding. This medication may destroy pre-existing clots and instigate bleeding in previously healing sites of injury. Alteplase may also destroy clotting factors and prevent future clot formation in blood vessels.

Considerations

Minimize Bleeding

Avoiding Needles and Pressure on Bleeding

Since alteplase increases the risk of bleeding, precautions should be taken to avoid complications. Avoid administering anticoagulants (i.e., heparin, warfarin, dabigatran) and antiplatelet (i.e., aspirin, clopidogrel) medications since they increase the risk of bleeding. Maintain tissue integrity by avoiding invasive procedures and needle punctures related to subcutaneous or intramuscular injections.

Monitor for Shock

Monitor Shocking

Internal bleeding may cause hypovolemic shock in the patient receiving alteplase. Significant intravasculature fluid loss prevents the heart from pumping an adequate supply of blood and oxygen to the organs. It is important to frequently monitor the patient for symptoms of shock. Be alert for changing vital signs such as decreased blood pressure, increased heart rate, and decreased body temperature. Assess the patient for increasing anxiety, confusion, shallow breathing, profuse sweating, and weak pulse.

Antidote

Aminocaproic Acid

Amigo-capris with Acidic-lemon

If excessive bleeding is suspected, stop thrombolytic therapy and administer aminocaproic acid (Amicar) as an antidote to prevent further bleeding. This antifibrinolytic drug prevents the conversion of plasminogen to plasmin and avoids fibrinolytic activity that results in bleeding. Other strategies to manage excessive bleeding from alteplase including administering fresh frozen plasma (FFP) or cryoprecipitate.