tirofiban (tye-roe-fye-ban)  
Aggrastat  
**Classification:** Antiplatelet agents  
**Pharmacologic:** Glycoprotein IIb/IIIa inhibitors  
**Pregnancy Category:** B  

**Indications**  
Treatment of acute coronary syndrome (unstable angina/non-Q-wave MI), including patients who will be managed medically and those who will undergo percutaneous transluminal angioplasty (PTA) or atherectomy. Used concurrently with aspirin and heparin.

**Action**  
Decreases platelet aggregation by reversibly antagonizing the binding of fibrinogen to the glycoprotein IIb/IIIa binding site on platelet surfaces.  

**Therapeutic Effects:** Inhibition of platelet aggregation resulting in decreased incidence of new MI, death, or refractory ischemia with the need for repeat cardiac procedures.

**Pharmacokinetics**  
**Absorption:** IV administration results in complete bioavailability.  
**Distribution:** Unknown.  
**Metabolism and Excretion:** Excreted mostly unchanged by the kidneys (65%); 25% excreted unchanged in feces.  
**Half-life:** 2 hr.

**TIME/ACTION PROFILE (effects on platelet function)**  
**ROUTE** ONSET PEAK DURATION  
IV rapid 30 min† brief‡  
† 90% inhibition of platelet aggregation at end of initial 30-min infusion  
‡ Inhibition is reversible following cessation of infusion

**Contraindications/Precautions**  
**Contraindicated in:** Hypersensitivity; Active internal bleeding or history of bleeding within previous 30 days; History of intracranial hemorrhage, intracranial neoplasm, or aneurysm; History of thrombocytopenia during previous tirofiban therapy; History of bicuspid aortic valve or other stroke within 30 days; Major surgical procedure or severe physical trauma within 30 days; History of recent myocardial infarction or stroke. Use with extreme caution in patients with aortic aneurysm; Severe hypertension (systolic BP > 180 mm Hg and/or diastolic BP > 110 mm Hg); Concurrent use of other glycoprotein IIb/IIIa receptor antagonists; Acute pericarditis; Lactation: Lactation.

**Use Cautiously in:** Platelet count 150,000/mm³; Hemorrhagic retinopathy; Female patients (risk of bleeding); Severe renal insufficiency (rate of infusion by 50% if CCr 30 mL/min); OB, Pedi: Safety not established; use in pregnancy only if clearly needed; Geri: ↑ risk of bleeding.

**Adverse Reactions/Side Effects**  
**CNS:** Dizziness, headache.  
**CV:** Bradycardia, coronary dissection, edema, vasovagal reaction.  
**GI:** Nausea.  
**Derm:** Hives, rash.  
**Hemat:** Bleeding, thrombocytopenia.  
**MS:** Leg pain.  
**Misc:** Fever, hypersensitivity reactions, pelvic pain, sweating.  

**Interactions**  
**Drug-Drug:** Concurrent use of aspirin, NSAIDs, warfarin, heparin, heparin-like agents, abciximab, epil暑kide, ticlopidine, or dipyridamole may ↑ risk of bleeding, although these agents are frequently used together or in sequence. Risk of bleeding may be ↑ by concurrent use of edastatin, colchicine, or sulfasalazine.  

**Drug-Natural Products:** Anticoagulant effect and bleeding risk with anise, arnica, chamomile, clove, dong quai, fenugreek, feverfew, garlic, ginger, ginkgo, Panax ginseng, licorice, and others.

**Route/Dosage**  
**IV (Adults):** 0.4 mcg/kg/min for 30 min, then 0.1 mcg/kg/min, continued throughout angiography and for 12–24 hr after angioplasty or atherectomy.

**Renal Impairment**  
**IV (Adults):** CCr 30 mL/min — 0.2 mcg/kg/min, then 0.05 mcg/kg/min, continued throughout angiography and for 12–24 hr after angioplasty or atherectomy.

**NURSING IMPLICATIONS**  
**Assessment**  
• Assess for bleeding. Most common is oozing from the arterial access site for cardiac catheterization. Arterial and venous punctures, I&I injuries, and interventional procedures are the most frequent sites for bleeding.  
• Assess patients receiving heparin and aspirin in addition to tirofiban CNS: dizziness, headache, coronary dissection, edema, vasovagal reaction.  

**Nursing Considerations**  
• Circumstances contributing to the risk of bleeding include abnormal platelet aggregation and platelet count.  
• Assess for signs and symptoms of bleeding. Maintain a high index of suspicion for bleeding.  
• Bleeding reactions occurred in 1%–7% of patients treated with tirofiban, with 4%–6% occurring as life-threatening or fatal.  

**Patient/Family Teaching**  
• Instruct patient to report any signs of bleeding.  
• Instruct patient to use soft toothbrushes and avoid invasive dental procedures for 48–72 hr.  
• Instruct patient to avoid aspirin and other NSAIDs during tirofiban therapy.  
• Instruct patient to avoid activities that increase risk of bleeding.  
• Instruct patient to call health care provider if signs of infection develop (e.g., fever, chills, cough, sore throat, unhealed pinprick to fingernail, increasing scar tenderness).  
• Instruct patient to report the following: uncontrolled bleeding, chest pain, shortness of breath, skin rash, or fever.
time, and use of urinary catheters, nasotracheal intubation, and nasogastric tubes should be minimized. Noncompressible sites for IV access should be avoided. IV bleeding cannot be controlled with pressure, discontinue tirofiban and heparin immediately.

- During vascular access, avoid puncturing posterior wall of femoral artery. Maintain bedrest with head of bed elevated 45° and affected limb restrained in a straight position while the vascular sheath is in place. Heparin should be discontinued for 5–6 hr and activated clotting time (ACT) ≥ 180 sec prior to pulling the sheath. Use compressive techniques to obtain hemostasis and monitor closely. Sheath hemostasis should be maintained for 4–6 hr before discharge from the hospital.

- Monitor for signs of heparin-induced thrombocytopenia (HIT) (see guidance) during therapy.

- Lab Test Considerations: Monitor hemoglobin, hematocrit, and platelet count prior to tirofiban therapy, within the following loading infusions, and at least daily during therapy (more frequently if evidence of significant decline). May cause marked thrombocytopenia/hematocrit reduction.

- If platelet count > 90,000/mm³, perform additional platelet counts to rule out pseudothrombocytopenia. If thrombocytopenia is confirmed, tirofiban and heparin therapy should be discontinued and condition monitored and treated.

- To prevent heparin-induced thrombocytopenia, assess aPTT 6 hr after the start of heparin infusion. Adjust heparin to maintain aPTT at approximately 2 times control.

- May cause presence of urine and fecal occult blood.

Potential Nursing Diagnoses

Ineffective tissue perfusion (Indications)

Implementation

- Do not confuse Aggrastat (tirofiban) with argatroban.

- High Alert: Use of antiplatelet medications has resulted in patient harm and/or death from internal hemorrhage or intracranial bleeding. Verify second practitioner independently check original order, dosage calculations, and infusion pump settings.

- Most patients require heparin and aspirin concurrently with tirofiban.

- Do not administer solutions that are discolored or contain particulate matter. Discontinue tirofiban and heparin immediately.

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IV Administration

- pH: 5.5–6.5

- Intermittent Infusion: Diluent: Tirofiban injection premix is ready for administration and does not require further dilution. Concentration: 50 µg/mL.

- Rate: Based on patient’s weight (see Route/Dosage section).

- Y-Site Compatibility: None: All compatible. (See Appendix A for complete listing of compatible and incompatible drugs.)
CONTINUED

tirofiban

- Y-Site Incompatibility: amphotericin B colloidal, amphotericin B lipid complex, dantrolene, diazepam, phenytoin.

Patient/Family Teaching

- Instruct patient to notify health care professional immediately if any bleeding is noted.

Evaluation/Desired Outcomes

- Inhibition of platelet aggregation resulting in decreased incidence of new MI, death, or refractory ischemia with need for repeat cardiac procedures.

Why was this drug prescribed for your patient?