Enoxaparin (Lovenox)

Enoxaparin was the first low molecular weight (LMW) heparin in the United States. It is used to prevent deep vein thrombosis (DVT prophylaxis) while patients are in the hospital or it can be used as a bridge medication for patients starting warfarin (Coumadin). Other LMW heparins include dalteparin (Fragmin) and tinzaparin (Innohep). The benefits for LMW heparins are that they can be administered outpatient, the patient can be educated to administer the medication to themselves subcutaneously, and they generally do not require monitoring PTT values.

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Mechanism of Action

Inhibits Clotting Factors
Inhibiting-chains on Clog Factory
Unlike standard heparin which inactivates factors IIa (thrombin) and Xa, enoxaparin primarily inactivates factor Xa, and inactivates IIa to a lesser amount. This prevents clots from forming, making it a safe and effective way of preventing clot formation.

Factor Xa
(10) Tin with A-apple
Enoxaparin works by binding to antithrombin, forming a complex which irreversibly inactivates clotting factor Xa.

Indications

Clot Formation Prevention
Broken Clogs
Enoxaparin can be used in the prevention of DVTs after surgeries, treatment of established DVTs, and patients with unstable angina or an acute STEMI.

Side Effects

Heparin Induced Thrombocytopenia (HIT)
Hippie-heron HITS Trombone-side-toe-peanut
HIT is an immune reaction to the heparin molecule that causes an activation of platelet formation. This syndrome presents with both platelet consumption and platelet activation simultaneously. This can be seen with platelet levels dropping most often within 5-10 days, and the patient may exhibit signs of DVTs. Signs of thrombocytopenia include low platelet levels, spontaneous bleeding, easy bruising and petechiae.

Bleeding
Blood
Monitor for signs/symptoms of bleeding, such as occult blood, bleeding around the gums, petechiae (especially in the lower extremities), and ecchymosis (bruised areas under the skin from blood escaping capillaries). Patients can be easily bruised and bleed longer than usual from blood draws or cuts so educate on the importance of avoiding minor tissue injuries to prevent ecchymosis.

Considerations

Medication Education
Medication Educator
Before administering a new mediation, educate the patient on the indication and side effects. If the patient is going home on enoxaparin, have them demonstrate proper administration technique. Patients taking anticoagulants should be educated to use electric razors and soft bristled toothbrushes, avoid scenarios which may arise in injury, and to never stop taking anticoagulants abruptly.

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Subcutaneous Injection

Sub-Q-tip Injecting

Enoxaparin is administered subcutaneously. SubQ injections are given at a 45-90 degree angle and do not require aspiration. Be sure to rotate injection sites and hold direct pressure to the area following administration of enoxaparin for up to 10 minutes until the site is no longer bleeding.

2 Inches from Umbilicus or Incisions

(2) Tutu Belly-button

Always administer the medication 2 inches away from the umbilicus or any abdominal incision. Areas around these sites have more scar tissue in the area and do not allow for the absorption of the medication to happen regularly.

Antidote

Protamine Sulfate

Potato-man with Sulfur-matches

Protamine sulfate is the antidote and a dose of 1 mg for each milligram of enoxaparin that was administered is given. Protamine sulfate binds directly to the free heparin in the bloodstream and inactivates it, immediately preventing further inactivation of clotting factors.

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