ORTHOSURGERY
Ιατρείο Ορθοπαιδικών Παθήσεων

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LOW MOLECULAR WEIGHT HEPARIN GUIDELINES

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Mechanism of Action:

• Acts as an anticoagulant by enhancing the inhibition rate of clotting proteases by antithrombin III impairing normal hemostasis and inhibition of factor Xa.

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Pharmacokinetics:

• Onset of action (peak effect): Anti- factor Xa and antithrombin 3-5 hours

• Elimination: Renal

• Half-Life: Based on anti-factor Xa activity 4.5-7 hours (longer in patients with renal impairment)

Dosing: (doses will be rounded to the nearest 10 mg)

• Prophylaxis:

▯ General surgery, medical patients, hip replacement: enoxaparin 40 mg subQ daily

▯ Renal dose (Crcl<30 ml/min): enoxaparin 30 mg subQ daily

▯ Trauma, knee replacement, hip replacement: enoxaparin 30 mg subQ twice daily

▯ Renal dose (Crcl<30 ml/min): enoxaparin 30 mg subQ daily

• Treatment:

▯ DVT/PE, unstable angina, NSTEMI: enoxaparin 1 mg/kg subQ twice daily

▯ Renal dose (Crcl<30 ml/min): enoxaparin 1 mg/kg subQ daily

▯ STEMI:

▯ <75 yrs: enoxaparin 30 mg IV bolus plus 1 mg/kg subQ followed by 1 mg/kg q12 hours subQ (max of 100 mg for the first two doses only)

▯ >75 yrs: No initial IV bolus; enoxaparin 0.75mg/kg q12h subQ (max of 75 mg for the first two doses only)

▯ Renal dose (Crcl<30 ml/min):

• <75 yrs: enoxaparin 30 mg IV bolus plus 1mg/kg subQ followed by 1mg/kg subQ daily

• >75 yrs: No initial bolus; enoxaparin 1mg/kg subQ daily

▯ PCI

▯ If enoxaparin 30 mg IV bolus dose plus 1mg/kg dose or ≥ 2 doses of subQ enoxaparin administered (without IV bolus dose)

• Procedure within 8 hrs of last subQ dose, no additional enoxaparin

• Procedure within 8-12 hrs of last subQ dose, give enoxaparin 0.3 mg/kg IV in cath lab

 If no enoxaparin 30 mg IV bolus dose and if only one dose of subQ enoxaparin administered (without IV bolus dose)

• At time of procedure, give 0.3 mg/kg IV prior to cath/PCI

 If no enoxaparin has been administered

• At time of procedure, give enoxaparin 1 mg/kg IV in cath lab if a IIb/IIIa inhibitor is not given; enoxaparin 0.75 mg/kg IV when a IIb/IIIa will be used

Monitoring:

• Routine monitoring is not necessary in most patients

• Baseline labs

 PT/INR

 aPTT

 CBC

 Platelet count (platelets should be monitored every 2-3 days for the first 2 weeks, then periodically)

 Serum creatinine (renal function should be periodically assessed during therapy)

• Monitoring anti-factor Xa levels may be warranted in certain high risk patients

 Morbid obesity (weight > 190 kg)

 Very low body weight (< 50 kg)

 Severe renal impairment (CrCl < 30 ml/ml)

 Pregnancy

 Patients with extended therapy (> 1 month)

• Anti-factor Xa levels

 Measure peak concentration 4 hours after the 2nd to 3rd dose

 Therapeutic range (peak concentration):

 0.6-1 units/ml (treatment of VTE with bid dosing)

 0.2-0.4 units/ml (prevention of VTE with bid dosing)

Renal Impairment:

• Enoxaparin is primarily eliminated renally. Patients with severe renal impairment will have a prolonged elimination half life which may increase the risk of bleeding

• UFH is recommended in dialysis patients or patients with renal impairment at high risk of bleeding

Reversal Recommendations:

• No complete antidote available for LMWH

• Protamine sulfate

 neutralizes 60% of the anti-factor Xa activity

 Reserve for patients with clinically significant bleeding episodes

 Dosing:

 LMWH within 8 hrs: administer 1 mg of protamine for every 1 mg (100 units) of LMWH

 LMWH within 8-12 hrs: administer 0.5 mg of protamine for every 1 mg (100 units) of LMWH

 LMWH more than 12 hrs: protamine not recommended

 A second dose of 0.5 mg of protamine per 1 mg (100 units) of LMWH may be administered if bleeding continues

Bridge Therapy:

• If overlapping LMWH or heparin with Warfarin, overlap for at least 5 days. Discontinue LMWH or heparin when INR is

therapeutic on two consecutive measurements 24 hr apart.