

Sept 2011
QUESTION 04

Describe the pharmacology of low molecular weight heparin (70% marks). Outline the pharmacology of hirudin (30% marks).

	Hirudin	Enoxaparin
Intro	Is a naturally occurring peptide found in leeches saliva with anticoagulant properties recombinant techniques are used to create drugs in this class	Enoxaparin is a LMWH prepared from unfractionated heparin by controlled enzymatic or chemical depolymerisation. Average of 5000 Daltons
Monitoring	APTT	anti Xa levels
Pharmacodynamics		
Mechanism	is via direct irreversible binding to thrombin	Activates antithrombin but due to shorter length preferentially inhibits factor Xa
Effects	Causes a prolongation of bleeding time	Bleeding Needs adjustment in renal failure
Side effects	Bleeding	Less HITS and osteoporosis
Pharmacokinetics		
absorption	administered SC	up to 90% via SC (greater than heparin)
distribution		less than heparin
metabolism		hepatic via heparinases / desulfation
excretion	excreted in the urine, dose adjustment required in renal failure	2-4 times longer half life than heparin dose independent half time urine as 10% active fragments, dose adjustment required in renal failure
Reversal	irreversible binding - no reversal agent dialysis with PMMA membranes works	Protamine by slow infusion Less effective than heparin due to the preferential Xa action