Treatment Options - DVT and PE
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DVT and PE

Deep Vein Thrombosis
- potentially life threatening

Pulmonary Embolus
- life threatening

Treatment Options

Heparin
- Parenteral
- Instant action

Coumadin (sodium warfarin)
- Oral
- No instant effectiveness

Thrombolytic Therapy
- Severe distress

IVC Interruption
- Medical treatment contraindicated

Heparin
LMWH 5-7 days
Interrupts thrombolytic process
Less heparin induced thrombocytopenia (HIT)
Preferred in pregnancy
Compression stockings
- 3 months
post phlebitic syndrome

If PE suspicion:
5,000-10,000 IU IVP
Unless contraindicated
If heparin inadequate
Birudin
Danaparoid
Until adequate warfarin tx

Baseline blood studies first
TCT-thrombin clotting time
PTT-partial thromboplastin time
PT-prothrombin time
CBC/platelet count
repeat q3-4d after 14 days

Heparin induced thrombocytopenia
IF Baseline Studies
TCT>.2
INR>1.5
PTT>1.5x midrange

Repeat studies
??coagulopathy

LMWH
At least as effective as UFH
Minimize bleeding  
Reduce mortality  
Prevent recurrence  

Advantages  
- Dose by body weight  
- Less laboratory monitoring  
- Anti-Xa monitoring  
- Very obese  
- Pregnant  
- Renal insufficiency  
- Allows outpatient treatment  

Disadvantages  
- Expensive  

Unfractionated Heparin (UFH)  
- Loading dose 5,000-10,000  
- 1300 units/hr (not 1,000)  
- Infusion pump  

Goal  
- TCT .2-.4 U/cc  
- PTT 1.5-2.5x mean normal  
- Repeat Q4-6H 24-36h until stable  

Heparin Contraindications  
- History of HIT  
- Active bleeding  
- Recent surgery—especially brain/eye/spine  

Heparin Complications  
- Bleeding  
  - 5%-20%  
  - HIT uncommon  
  - D/C if platelet <100,000  
- Osteopenia  
  - Long term use  
- Skin necrosis  
- Hyperkalemia  
- Death  

Coumadin (Warfarin)  
- Interferes Vit K  

Depletion of Factor half life  
- II >100H  
- VII 4H-6H6  
- IX 20H-65H  
- X 20H-60H  
- Effective 4-5 days  

Coumadin Complications  
- Bleeding  
  - INR 2-3 4.3%-6%  
  - INR >3 14%-42%  
  - Fatal .6%  
  - Major 3%  
  - Minor 9.6%  

Sites  
- GI/GU  

Coumadin  
- D/C heparin 4-5 days  
- INR 2-3
If antiphospholipid syndrome INR 3.0-3.5

INR=PT(patient)/PT(control)

Reverse
Vit K
FFP
INR>6 OR bleeding use BOTH

Duration of Treatment
6-12 months
idiopathic
12 months-lifetime
- Unresolved cancer
- Anti-cardiolipin Ab
- Anti-thrombin deficiency
- Recurrent VTE

Thrombolytic Therapy
Plasminogen  plasmin
Degrades fibrin thrombus
t-PA specific to thrombi
No difference in bleeding w/any agent

Recommended
- Acute massive PE
- Hemodynamically unstable (32% mortality)

Contraindications
- Diastolic BP >110
- Bleeding disorder
- risk intracranial bleed
- Recent trauma/surgery

Retrospective Study-matched set
- 64 patients heparin
  No bleeding CX
- 64 patients heparin + thrombolytic tx
  15.6% bleeding
  6.25% death

IVC Interruption
Indications
- Contraindication to anticoag tx
  - Hi risk PE
  - Recurrent PE w/Adequate anticoagulation
  - Chronic Recurrent PE
  - pulm hypertension
  - Efficacy 95%
  - Recurrent PE rare
  - Mortality .0003%

Pulmonary Embolectomy
- Controversial  massive PE
- Hemodynamic instability
- Failure/contraindications thrombolytic tx
- Mortality 10%-75%

Balloon Tipped Catheter
- 88% successful removal
- 27% mortality (33% open)