

39. Pulmonary Embolism

Third most common acute cardiovascular disease

- Dyspnea 77% (A-a gradient)
- Tachypnea 70%
- Chest Pain 55% (usually pleuritic)
- Tachycardia 43%
- Cyanosis 18%
- Hemoptysis 13%
- Syncope 10%

Clinically Silent PE in DVT disease as high as 45%. (Arch Intern Med, 24 Jan 2000)

Suggested Evaluation

- I. Electrolytes, LFT's, CBC, PT, PTT, EKG, CXR
 - II. D-Dimer (low risk without cancer, recent surgery or trauma)
 - III. +/- Arterial Blood Gas (preferably on room air)
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- I. Spiral CT (1.25 to 2.5 mm helical cuts with 150 cc Contrast)
 - II. Lower extremity ultrasonography or Leg CT venogram during Spiral CT
 - III. Consider Echocardiography, (PA pressures, evaluation RV function)
 - IV. Angiography reserved for patients at high risk of anticoagulation.

2. Fibrin D-Dimer

- D-Dimer <0.5ug/mL, For low risk DVT rule out : negative predictive value 92%

3. Primary Work up: Hereditary/Acquired Thrombophilia (top 2 are 60% of Thrombophilia)

1. Resistance to activated protein C (APCr) (40% of DVT)
2. Factor V Leiden (PCR) (7% of Whites-Hetero or Homozygous)-(1994)
3. Prothrombin 20210A (PCR) (20% of DVT, 3% of Whites) (1996)
4. Look for: Underlying malignancy, Estrogens, Trauma, Immobility, Obesity

4. Secondary Work up (<2% of Thrombophilia)

- I. Antithrombin III - absence, reduction, resistance (3 days off Heparin)
- II. Protein C & S (Off Coumadin)
- III. Vitamin K levels (Proteins C and S are Vitamin K dependent)
- IV. Homocystinemia
- V. Plasminogen Deficiency
- VI. ANA, Anticardiolipin Ab (immunoglobulins M and G), Lupus anticoagulant

Therapy:

1. Conventional anti-coagulation (Heparin / Enoxaparin/ Warfarin)
 - Untreated PE: 30% mortality, which is 8% with anticoagulation
2. Thrombolytic therapy
 - For Hemodynamic instability and/or RV Dysfunction-on echocardiogram
3. Embolectomy
 - Very selective cases, Perioperative mortality is 25-50%
4. Temporary-Retrieval Vena Caval Filters: VenaTech
5. Permanent IVC Filters: 1. Bird Nest, 2. Greenfield VenaTech, 3. Simon-Nitinol filter
 - No definitive evidence for efficacy, but accepted therapy
 - Reserved for patients with recurrent PE on anti-coagulation



Vena Tech