

Pulmonary Thromboembolism

Symptoms		Signs	
<ul style="list-style-type: none"> Dyspnoea 73% Pleuritic pain 63% Cough 43% Leg swelling 25% 	<ul style="list-style-type: none"> Leg Pain 25% Palpitations 16% Haemoptysis 10% Wheezing 10% Angina-like pain 6% 	<ul style="list-style-type: none"> Tachypnoea ($\geq 20/\text{min}$) 69% Rales (crackles) 43% Tachycardia ($>100/\text{min}$) 26% 4th Heart sound 17% Increased P₂ 16% Deep venous thrombosis 11% Temperature $>38.5^\circ\text{C}$ 10% 	<ul style="list-style-type: none"> Diaphoresis 9% Wheezes 7% 3rd Heart sound 4% Homan's sign 3% RV heave 3% Pleural friction rub 2% Cyanosis 2%

4 main clinical syndromes:

<p><u>PULMONARY INFARCTION</u></p> <ul style="list-style-type: none"> - Pleuritic pain - Rales - ABNORMAL X-RAY 	<p><u>ACUTE COR PULMONALE</u></p> <ul style="list-style-type: none"> - 60-75% obstruction of pulmonary circulation - shock or loss of consciousness - substernal chest pain and hemoptysis - NORMAL CHEST X-RAY - ABNORMAL ECG
<p><u>ACUTE UNEXPLAINED DYSPNOEA</u> < 60% obstruction without infarction</p> <ul style="list-style-type: none"> - Decreased arterial PO₂ - NORMAL ECG - NORMAL CHEST X-RAY 	<p><u>CHRONIC THROMBOEMBOLIC PULMONARY HYPERTENSION</u></p> <ul style="list-style-type: none"> - Progressive exertional dyspnoea - Episodic transient dyspnoea - Over 50% of vascular bed obstructed - Looks on O/E like pulmonary hypertension

Differentials:

- | | |
|--|---|
| <ul style="list-style-type: none"> - Lung infection - Post-op atelectasis - Musculoskeletal pain eg. <u>costochondritis</u> | <ul style="list-style-type: none"> - Oesophageal spasm - Pericarditis / pleuritis - Anxiety attack - Acute MI |
|--|---|

DIAGNOSTIC TESTS:

D-dimers: only moderately specific, but highly sensitive.

ECG: 70% are abnormal;

...but probably just sinus tachy, non-specific ST or T wave changes

Sometimes RVH, Rt axis deviation, RBBB

MOSTLY USED TO RULE OUT CARDIAC CAUSES

Chest X-ray: usually normal; May see decreased vascularity, visible thrombus, perhaps elevated diaphragm of atelectasis...

MOSTLY USED TO RULE OUT PNEUMOTHORAX

ABGs: low PaO₂

...but probably just sinus tachy, non-specific ST or T wave changes

Sometimes RVH, Rt axis deviation, RBBB

VENTILATION-PERFUSION SCANNING

Test of choice! Always follow D-dimer assay with the V/Q scan!

Shows nicely the areas which are not being perfused (though still being ventilated) and thus will show moderately large PE, but may miss little segmental Pes (resolution is very poor)

When NOT to treat PE:

Normal perfusion scan
Implausible history, PLUS

- Normal D-dimer, or
- Normal leg ultrasound
- Uncertain VQ scan
- Normal chest CT

Management of PULMONARY EMBOLISM

IN PREGNANCY:

SHORT TERM: prevent cardiopulmonary failure

HEPARIN = SAFE

WARFARIN = DANGEROUS

1. **OXYGEN !!** restore sats
2. **ANALGESIA** if PE @ pleural nerves (exquisite pain)
3. **THROMBOLYSIS** if indicated (eg. massive iliofemoral thrombus)
4. **SURGERY (embolectomy)** IF RISKY (eg. Rt Heart Failure)
5. **LMW Heparin 1mg per kg for 5 days + start on oral WARFARIN**
overlap heparin + warfarin until INR is satisfactory
reverse with protamine
6. Monitor clotting time!! **Manage UNTIL SATISFACTORY**
(maintain an APPT between 55 and 90 seconds.)

LONG TERM: address risk factors + months of WARFARIN

1. Oral or subcutaneous anticoagulants for at least 3 months
(or until temporary risk factors depart)
pregnant women: switch to warfarin post-partum
2. TED stockings to prevent recurrent PE
3. **QUIT SMOKING**

THE THROMBOLYTICS:

Only if

- Severe iliofemoral thrombus
- Evidence for right heart or pulmonary artery thrombi
- Massive PE (syncope, hypotension, hypoxia, heart failure)
- Severe RV dysfunction on ECG

...mortality with massive embolism is 35% irrespective of treatment

ANTICOAGULATION IMPOSSIBLE?

- Time to install an **Inferior Vena Cava Filter**
- Only if patient is actively bleeding, has recurrent Pes refractory to heparin.

