A Multi-Disciplinary and Multi-Centre Approach

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Latvia, January 2015

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- A British journey through hospital
- Discuss Diagnosis
- Multi-Disciplinary Team

Bristol

- City in South-West of England
- Population of 437,492 [1]
- Famous for Clifton Bridge, Balloons, Cider, Wallace and Gromit, Banksy…

[1] Population and living conditions in Urban Audit Cities, larger urban zone. Eurostat. European Commission. 18 June 2011

Bristol Royal Infirmary

- University Teaching Hospital
- Tertiary services
- Approximately 500 beds

Department of Respiratory Medicine

- 12 Consultants, 5 Specialist Registrars
- Team of respiratory nurses, physiotherapists, occupational therapists, dieticians

63 year old male

- Admitted to Emergency Department
- Fit and well
- Visit to GP recently re. pain in right leg
- Dyspnoea 7/7, worse in last 12 hours
- No chest pain, no cough, no haemoptysis
- Pre-syncope → 999

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What would you do next Germany?

- **A** – Own
- **B** – RR 40; SATS 99% on 15L
  Chest – Clear; Cyanotic on arrival
- **C** – 115 bpm regular; BP 122/76
  HS – Dual; Cool peripheries
  Calves – Soft, non-tender, no swellings
- **D** – GCS 15
  Moving all 4 limbs
- **E** – 34.5C
  Abdomen – Soft, Non tender
  No masses

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What investigations would you do Italy?

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Russia comment on this CXR..

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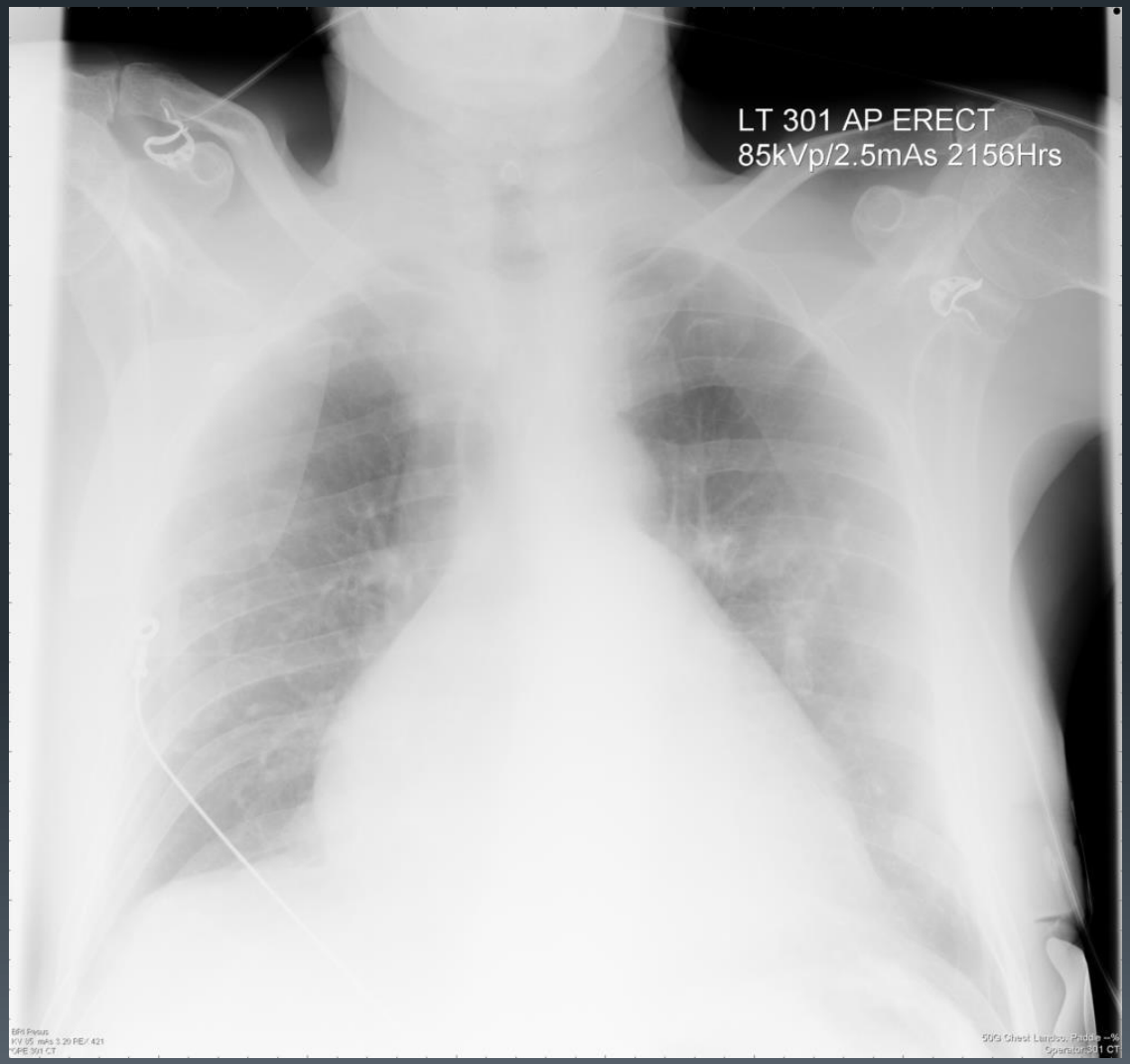

ECG

Sinus tachycardia

TWI anterior leads

ABG

Mixed respiratory and metabolic acidosis

Haematology

FBC or CBC NAD

INR 1.8 (1)

Biochemistry

ALT 152U/L (0 - 35 U/L) Alb 33g/L (30 - 50 g/L)

CRP 52mg/L (<5)

TnT 45µg/L (<20)

Bedside TTE

- Dilated RV
- Mild impairment of RV
- Raised pulmonary pressure 46mmHg
- Right atrium – mobile structure suggesting a thrombus

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What does this CTPA show Latvia?

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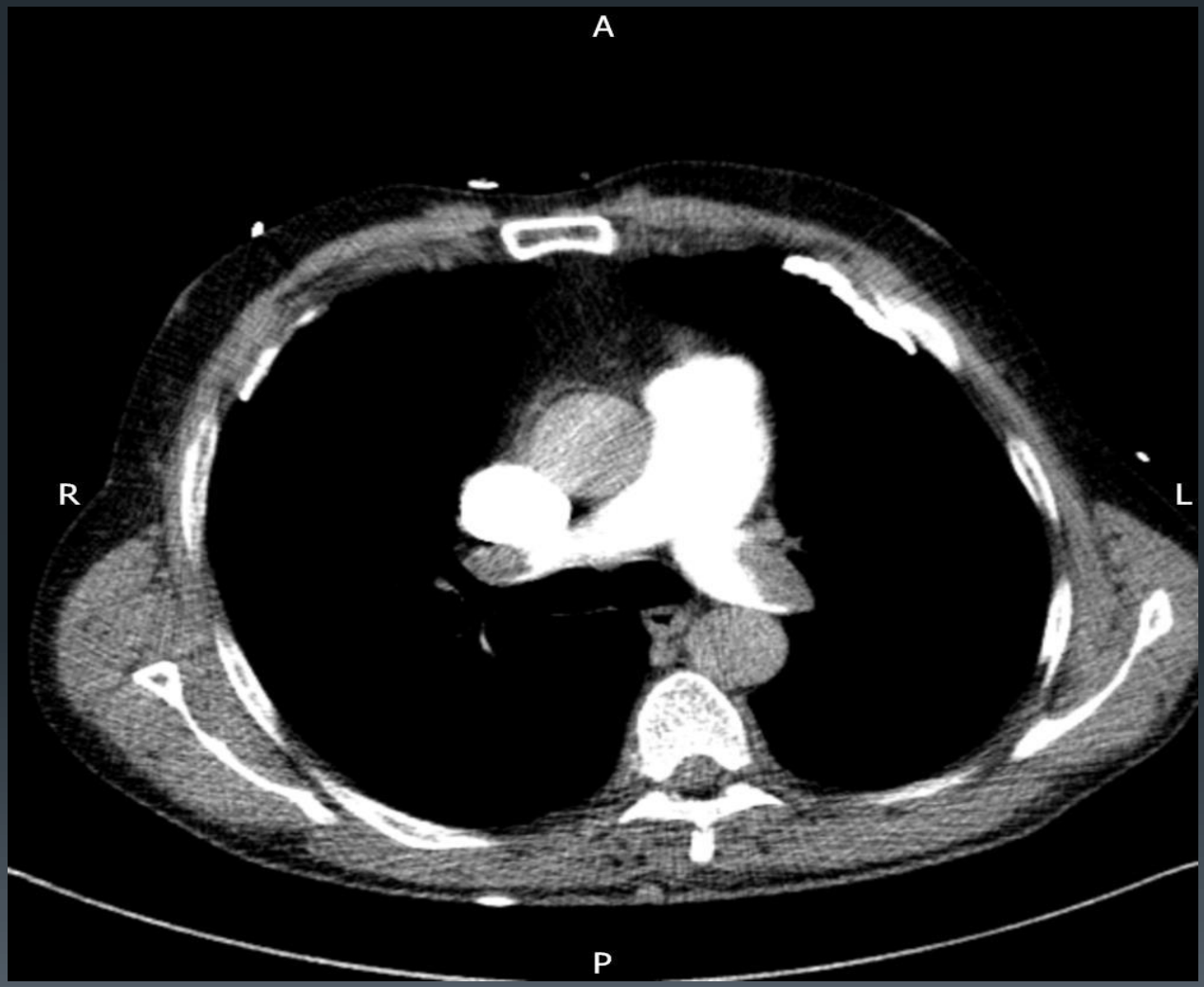


Problems (On Admission)

1. Submassive Bilateral Pulmonary Embolism – hypoxic but normotensive
2. Right Atrial Thrombus
3. Pulmonary Hypertension
4. Right heart strain
5. Deranged LFTs and high INR

Discussion – To thrombolyse?

- Professor of Emergency Medicine
- Consultant Critical Care
- Consultant Physician
- Consultant Cardiologist
- Consultant Cardiothoracic Surgeon

→ Decided **not to thrombolyse**

- No hypotension
- Improving ABGs and lactate

Transferred to ICU..

- Continue with high flow oxygen
- Commence IV heparin
- CT abdomen – in view of deranged LFTs ?malignancy
- Atelepase at bedside

Day 1

- For Dobutamine due to hypotension (80mmHg systolic)
- Continue on IV heparin
- APTT
- Re-discuss ?thrombolysis
- Repeat bloods and monitor urine output
- Repeat TTE – Dilated RV, large right atrial thrombus
- USS legs showed significant right femoral DVT
- CT abdomen NAD

Re-discussion

- Experts in pulmonary hypertension - Papworth and Bath

- Not for thrombolysis at present

  - Concern atrial thrombi would dissipate into small clot and exacerbate the PE
- For thrombolysis if cardiovascular collapse
- Not for embolectomy in acute phase
- Unlikely to benefit from acute intervention to reduce pulmonary artery pressure

Day 2

- Unwell overnight
- More hypoxic
- Reduced urine output

→ Continue dobutamine at higher rate
Consider sildenafil
Commenced on CPAP

Day 3-6

- Remained on ICU
- Continue CPAP (stopped Day 4)
- Tumour markers sent
- Bloods improved
- Commenced warfarin (Day 6)
- Eating and drinking well

Problems List

1. Submassive Bilateral Pulmonary Embolism (needed CPAP and inotropes)
2. Right Atrial Thrombus
3. Pulmonary Hypertension
4. Right Heart Strain
5. Right leg DVT
6. High PSA, abnormal PR examination ?Prostate malignancy
7. Improving LFTs and renal function

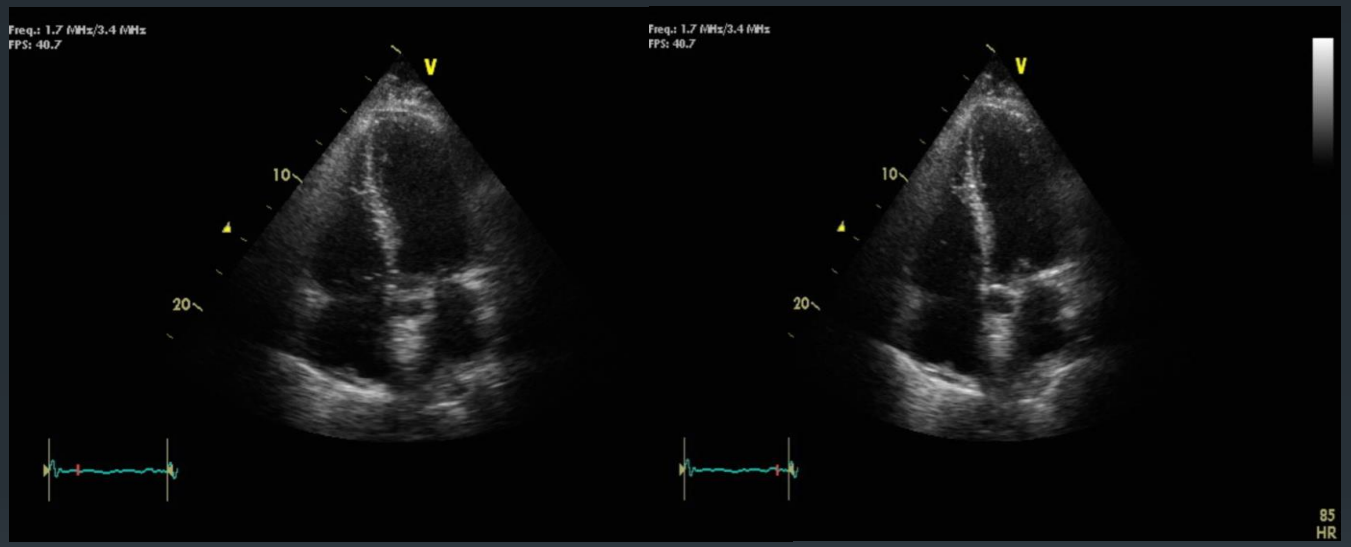
Day 7

- Transferred to respiratory ward
- **Significant improvement**
- Requiring 2L of oxygen via nasal specs
- Continue warfarin (INR >2.5), met Coagulation team
- Physiotherapy (concern re. right leg and desaturation on exercise)
- Occupational Therapist
- Dietician
- Discuss with urologists re- abnormal PR and high PSA result

Urology Review (Day 8)

- Discussed at Urology Cancer MDT
- Unable to biopsy whilst on anti-coagulants
- CT abdomen – no comment on the prostate
- Biopsy in 6/12 and re-discussion at MDT

Day 9



TTE

(Holland…?)

CTPA

- Reduction in clot burden
- Mosaic attenuation pattern representing perfusion defects
- Features of right heart strain

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Cardiac Review (Day 10)

- Severe cardiomyopathy
- Heart Failure medications
- For cardiac MRI as OP

Problems List

1. Submassive Bilateral Pulmonary Embolism – improving, on warfarin
2. Improving pulmonary arterial pressures
3. **New severe left ventricular impairment**
4. ?Prostate malignancy, not for current investigation
5. Right leg DVT
6. Poor mobilisation – desaturating on light exercise

Not just medicines…

- Mobilisation
- Stair Assessment
- Kitchen Assessment
- Nutrition review, lost 4kg in ICU

→ Multiple reviews, discharged when safe

Discharged (Day 14)

- Continue warfarin
- Cardiac MRI and OP follow up 2/52
- Respiratory follow up 6/52
- Urology review and biopsy 6/12
- Thrombophilia screen

Pulmonary Embolism

- Blockage of the main artery of the lung to one or more of his branches
- Most commonly results from a DVT
- 15% sudden death is due to Pulmonary Embolism [1]
- Risk factors – pregnancy, malignancy, recent immobilisation, thrombophilia, don't ever forget the hospital inpatient!
- Wells Score – can predict probability
- Anticoagulation is the mainstray of treatment

[1] Goldhaber SZ (2005) "Pulmonary thromboembolism" In Kasper DL, Braunwald E, Fauci AS et al. Harrison's Principles of Internal Medicine (16th ed). New York, NY: McGraw-Hill. Pp 1561-65

Barritt and Jordon [1]

- Peformed at Bristol Royal Infirmary in 1960
- Anticoagulation vs Placebo
- Mortality from untreated PE is 26%

[1] Barritt DW Jordon SC Anticoagulation drugs in the treatment of pulmonary embolism. A controlled trail. Lancet. 1960 Jun 18;1 (7138): 1309-12

Thrombolysis

- Massive PE causing haemodynamic instability [1]
- Systolic BP <90mmHg
- Pressure drop of 40mmHg for greater than 15 minutes
- If Cardiac arrest is imminent

Opinion is still very divided especially with regard to sub-massive PE

[1] BTS guidelines for the management of suspected acute Pulmonary Embolism Thorax 2003; 58:470-483

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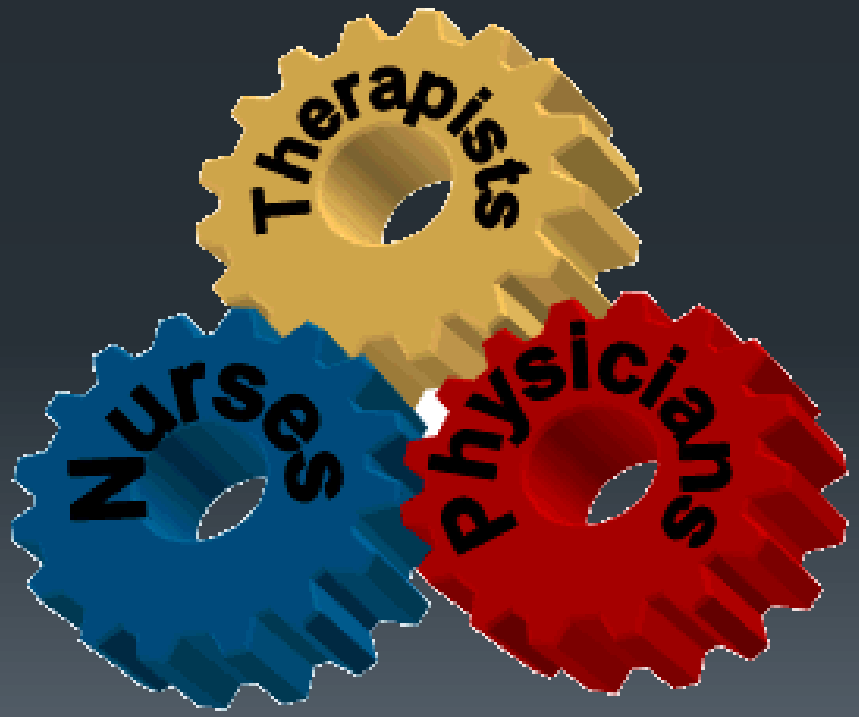
Multi-Disciplinary Team



Key Points

- Submassive pulmonary embolism – criteria for thrombolysis
- Multiple consultants from various hospitals involved in his care
- Variety of specialtes involved in his care
- Discussed at multiple Multi-Disciplinary Team (MDT) meetings
- Importance of physiotherapy, dieticians and occupational therapists
- Able to give our patient central focused care and best decision to suit his individual needs

Any Questions?

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Visit Bristol!