A CASE OF PULMONARY CONGESTION

Parminder Chaggar
Heart Failure and Devices Trainee

University Hospital of South Manchester
University of Manchester
PULMONARY CONGESTION
- PATHOPHYSIOLOGY

- Pulmonary arteries
- Pulmonary arterial hypertension
- Pulmonary veins
- Pulmonary venous hypertension
- Pulmonary veins
- Pulmonary venous hypertension
- RV failure
- LV end-diastolic pressure
- LA pressure
- Trans-capillary leak
- Oedema fluid
- Capillary bed
- Alveolus
- LA
- RA
- RV
- LV

- Pulmonary venous hypertension
PULMONARY CONGESTION
- PATHOPHYSIOLOGY

- ↑ Left atrial pressure
- Stiffer pulmonary vessels
- ↑ Resistance to flow

Wetter lungs

Melenovsky V, Eur J Heart Fail 2015
PULMONARY CONGESTION
- IMPORTANCE

Melenovsky V, Eur J Heart Fail 2015
CASE HISTORY

- 91 year old lady
- MI 1967 + 1971
- Severe LVSD 2005
- AF 1989
- Hypothyroidism
- Gastrointestinal stromal tumour
- Postural hypotension
  - Hospitalisation with collapse
  - ACEi discontinued
- Carvedilol 12.5mg bd
- Frusemide 40mg od
- Pravastatin 10mg od
- Thyroxine 50mcg od
- Clopidogrel 75mg od
- Lives alone (daughter next door)
- Self-caring
- NYHA II - IIIa
REFERRED TO CARDIOLOGY OUTPATIENTS

- New to area

- Recent “congestion episode” with only slight increase in SOB

- Diuretics carefully titrated to daily home BP

- Increased diuretics induced AKI and hypotension
FURTHER ASSESSMENT

- Comfortable
- HR 63 AF
- BP 106/64 sitting
- JVP normal
- Bilateral oedema
- Extensive bibasal creps
- Hb 132 g/L
- Cr 98 mmol/L
- GFR 49 mL/min
- Alb 32 g/L
RECENT CT

Widespread sub-pleural fibrotic changes
**IMPRESSION**

- Ischaemic cardiomyopathy with difficult drug optimisation

- Difficult to assess fluid status
  - Fibrotic chest crackles
  - Non-cardiac peripheral oedema

- Likely episodes of over-diuresis driven by chest signs
CRACKLES, CREPS AND RALES
- PATHOPHYSIOLOGY

Sudden airway opening

Oedema fluid

Pus
CRACKLES, CREPS AND RALES
- PATHOPHYSIOLOGY

Sudden airway opening

Interstitial changes
CRACKLES, CREPS AND RALES - CAUSES

- Infection
  - Pneumonia
  - Bronchiolitis
- Inflammation
  - Interstitial fibrosis
  - Toxic inhalants
  - ARDS
  - (Pleurisy)
- Pulmonary oedema

Sudden airway opening

Interstitial changes

Pus

Oedema fluid
HEART FAILURE OR NON-CARDIAC CREPS?

• General – history, patient appearance

• Supportive clinical signs
  – LV heave, gallop rhythm, JVP, tachycardia

• Alternative diagnoses
  – sputum, fevers, predominantly unilateral signs, previous investigation

• CXR can be helpful
SUMMARY

• Chronic pulmonary congestion associated with adverse changes in the pulmonary vasculature

• Pulmonary congestion in heart failure is associated with poor outcomes

• But not all crackles are cardiac in origin – beware of over-diuresis

• Correlate any chest signs with the patient history, general status and investigations