THE BREATHLESS PATIENT – CASE STUDIES
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Case 1
- 42 yr old male an emergency admission with acute SOB
- On arrival v SOB and no history possible
- On frusemide 20 mg od, bisoprolol 2.5 mg od and ramipril 5 mg od
- JVP elevated, normal heart sounds and inspiratory creps up to mid zones; BP 161/95
- ECG: sinus tachycardia
- FBC, Ur and Electrolytes, Troponin, Glu, LFTs sent

Immediate Management
- Frusemide – bolus or infusion?
- Intravenous nitrate?
- Dobutamine?
- Renal Dopamine?
- Milrinone/Levosimendan?
- Nesiritide?
- Haemofiltration?
- Urgent cardiac catheterisation and IABP?
- Wait for urgent echo 1st?

Epidemiology: Acute Heart Failure Syndromes
- 12% inpatient and 30% 1 year mortality
- 45% pts rehospitalized within 12 months
- Only 20% de novo presentation
- 60% CAD, 70% HTN, 40% diabetes, 30% AF, 30% CKD, 10% valve disease
- 30% systolic BP > 160 mmHg; 10% hypotensive
- 50% ACEi/ARB, 50% beta blocker, 80% diuretic
- Management consumes 2% of total european healthcare expenditure, 75% relating to inpatient care

General Treatment Measures
- Treat sepsis (20% cases)
- Stop NSAIDs
- Insulin infusion for diabetics
- If Hb < 11 g/dL consider iron infusion
- Maintain SaO2 > 95%
- CPAP/NIPPV reduce need for endotracheal intubation but little effect on mortality
- Early treatment and intervention for suspected ACS/valve disease
- Maintain/Restore sinus rhythm

Loop Diuretic Treatment
- 1st line recommendation by American Heart Failure Society
- Continuous infusion has superior diuretic and natriuretic effect compared to bolus injections
- Addition of thiazide diuretic improves diuretic effect of loop diuretic
- Electrolyte disturbance, neurohormonal stimulation, worsening renal function and refractoriness in decompsated heart failure limit effectiveness and may be associated with poorer outcome
- Adequate diuresis not achieved in 20% patients

International Working Group AHFS 2009
Vasodilators

- Reduce preload and LV filling pressure, reduce afterload, reduce myocardial O2 consumption, improve cardiac output and congestion
- Iv GTN or nitroprusside should be used if systolic blood pressure > 110 mm Hg
- Nesiritide (BNP analogue) is a vasodilator with natriuretic and diuretic properties; incidence hypotension similar to nitrates; no impact on long term outcome

Inotropes

- Dobutamine and milrinone/levosimendan acutely improve cardiac output
- Long term use associated with increased mortality and morbidity
- Generally used if systolic BP < 90 mmHg as short term bridge to definitive treatment
- Renal dopamine improves cardiac output, renal perfusion and diuresis but increases arrhythmia risk

Role of Ultrafiltration: Unload Trial


Our Patient

- Frusemide infusion and Intravenous GTN
- Ramipril and Bisoprolol continued
- Once pulmonary oedema cleared frusemide dose reduced to 40 mg od
- Ramipril increased to 10 mg od and Bisoprolol to 5 mg od; Spironolactone 25 mg od added
- In patient cardiac catheterisation and echo demonstrated poor LV function and 3 vessel CAD so referred for CABG

Case 2

- 72 year old indian female admitted with 2 week history SOB
- Hypertensive and diabetic
- BP 161/62; soft late esm and late insp creps in lung bases
- ECG: sinus tachycardia
- BNP/Troponin: elevated
Management

- Frusemide infusion and Intravenous GTN
- Aspirin and Clopidogrel; Clexane
- Ramipril commenced after 24 hours
- Echo
- Coronary Angiogram: unobstructed coronary arteries

Concentric LVH: 1.3 cm
Calculated LVMI 136g/m²
Normal LVEF

Raised LV Filling Pressure

E/A = 2.1
E Dec = 111msecs
E/Ea = 18

Impaired long axis velocity

Distribution of LVEF in AHF

Cleland JGF et al. Eur Heart J 2003;24(5):442-63

Case 3

- 68 yr old male with 6 month history breathlessness
- Admitted acutely SOB and clinically in pulmonary oedema
- Had esm; sinus tachycardia and BP 158/86
- On ramipril 5 mg od
Management

- Frusemide boluses 80 mg bd
- Bisoprolol 2.5 mg od once pulmonary oedema cleared; ramipril stopped
- Coronary angiogram: coronaries unobstructed
- Referred for AVR
- Avoid vasodilators and inotropes as often increase gradient across mitral valve (vasodilators may be useful in low flow AS but discuss with cardiologists)

Natural History AS

Ross JR, Braunwald E. Circulation 1968:S61-67

Immediate Management AHF

- Iv frusemide infusion and nitrate to continue until no evidence of fluid overload
- Avoid inotropes unless patient shocked
- Resistant cases to consider nesiritide or ultrafiltration
- If suspected ischaemic cause consider urgent angiography and IABP
- If patient has significant heart murmur or deteriorates despite diuretic/vasodilator urgent echo essential

Case 4

- 61 year old lady with 3 month history SOB
- Very breathless last 48 hours
- No relevant PMH; obese
- Sinus tachycardia; BP 105/66; normal heart sounds and clear chest; JVP difficult to assess but probably elevated
Differential Diagnosis Acute SOB with Clear Lungs and Raised JVP

- Acute PE
- Exacerbation COPD
- Pericardial effusion (if small effusion, AR and chest pains suspect aortic dissection)
- Inferior MI with RV involvement

Management

- No pulsus paradoxus and good urine output
- Patient kept under observation overnight
- Pericardial drain the following morning
- 1.5 L blood stained fluid removed
- Metastatic breast CA