Syncope

38 year old woman
History

- An active equestrian
- No significant PMH
- x2 episodes of ‘syncope’ after routine venesection
- x2 episodes of ‘palpitations’ whilst anxious

Family History
- ‘unexpected’ death of mother at age 63
- ‘unexpected’ death of maternal grandfather at age 43 during an episode of ‘pneumonia’
History

- Patient was seen as a pre-operative assessment
- Requires essential spinal decompression surgery
- ECG is of ‘concern’
‘Brugada phenotype ECG’
Discussion and Outcome

► Reasons for concern
  ▪ Syncope episodes
  ▪ Palpitations x2 episodes
  ▪ Need for anaesthesia

► Action taken
  ▪ Surgery and GA performed
  ▪ ECG monitoring with defibrillator attached
  ▪ Contra-indicated drugs were avoided
  ▪ Ajmaline challenge performed - positive
Discussion

- Probable vasovagal syncope
- ‘Possible’ arrhythmogenic cause of syncope
- Potential cause of fatal rhythm disturbance
- AICD
- Family screening
Syncope – the definition

- A temporary LOC due to transient cerebral hypoperfusion characterised by rapid onset, short duration and spontaneous complete recovery.

- Can result from a cessation of cerebral blood flow of 6-8 seconds or a fall in blood pressure to ≤60 mmHg.
Classification of syncope - I

- Reflex (neurally mediated) syncope
  - Vasovagal
    - Emotional stress, fear, pain, blood, instrumentation
    - Orthostatic stress
  - Situational
    - Micturition, post-prandial, post-exercise, visceral pain, defaecation, swallowing, cough, laugh, brass instrument playing, weight lifting
- Carotid sinus syncope
Classification of syncope - II

- Syncope due to orthostatic hypotension
  - Primary autonomic failure
    - Parkinsons disease
  - Secondary autonomic failure
    - Diabetes, amyloidosis, spinal injuries
  - Drug induced
    - Alcohol, vasodilators, diuretics, antidepressants
  - Volume depletion
    - Haemorrhage, diarrhoea, vomiting, sweating
Classification of syncope - III

► Cardiovascular syncope
  ➢ Arrhythmia
    ➢ Bradycardia (hypothyroidism)
    ➢ Tachycardia
  ➢ Drug induced tachy - or bradycardia
  ➢ Structural heart disease
    ➢ MI, HCM, AS, MS, tamponade, prosthetic valve dysfunction, PE, Aortic dissection, pulmonary hypertension, tumours
General points on syncope

- Reflex syncope is the commonest cause in any setting
  - VVS can be diagnosed - if associated with emotional or orthostatic stress and typical prodrome (sweating pallor, nausea)

- Cardiovascular cause is second most common
  - Higher frequency in emergency settings and older patients

- Orthostatic hypotension is a rare cause of syncope in those <40 years of age
General points

► Patients with very frequent symptoms
  ► Often have psychogenic pseudo-syncope

► Elderly patients
  ► Often give a clear history of a mechanical fall
  ► If male – often micturition related
Evaluation I

► Exact situation of syncope
  ▪ Exercise, post-exercise, trauma, micturition, restaurant, standing or sitting, post-ictal features etc

► Immediate ECG if arrhythmia suspected

► Holter 24 hour – 7 day recording device
  ▪ In patients >40 yrs of age with structurally normal hearts and ECG, an arrhythmic cause is found in up to 50%

► Can use implantable recording device
  ▪ Battery life of up to 36 months

► CSM in patients >40 years of age
  ▪ CSM hypersensitivity = pause of >3 secs or BP fall >50mmHg

► Any FH of cardiac disease
  ▪ Sudden or unexpected death or PPM
Evaluation II

- **Orthostatic challenge**
  - Lying & standing BP when standing up related to symptoms

- **Echocardiogram**
  - when CVS cause ‘known’ or suspected

- **Exercise treadmill stress test**
  - ECG throughout and ‘recovery period’ parameters

- **Other specific test (neurology)**
  - when suspect non-syncopal T-LOC

- **‘Tilt table testing’**
  - only in very specific situations
Evaluation III

- Coronary angiography
  - If suspect ischaemic aetiology

- Psychiatry referral
  - Pseudo-seizures, recurrent syncope, anorexia type scenario

- Autonomic nervous system function tests

- Electroencephalography (EEG)
Migraines
- More frequent to have syncope in patients with migraines

TIA’s
- Age category

Epilepsy
- Aura, post-ictal, tongue biting, injury, headache after event, incontinence
ECG

- Sinus bradycardia of <40/min when awake
- Q-waves suggest MI
  - Persistent ST-segment elevation suggests ventricular aneurysm
- Mobitz II (not Wenkebach) or 3rd degree CHB
- Alternating Right and Left BBB
- VT or rapid SVT
- Non-sustained Polymorphic VT
- Long or short QT interval
- Brugada ECG
- T-waves down V1-V3 with epsilon waves
  - Suggests ARVC
- PPM or ICD malfunction
  - Call and book in to the Pacing clinic at Harefield
Specific forms

► Carotid sinus syncope
  ► Usually no mechanical trigger is obvious and CSS is diagnosed by CSM
  ► Do not perform CSM if TIA or CVA or carotid bruits

► Postural orthostatic tachycardia syndrome (POTS)
  ► a symptomatic marked HR increase (>30 beats/min or >120/min) and unstable BP
  ► Usually young women
  ► Common association with Chronic fatigue syndrome
  ► Pathophysiology unclear
    ► deconditioning, inadequate venous return, excessive peripheral blood pooling
Treatment

► Cardiac cause
  ► refer to cardiology (Holter, Echo, anti-arrhythmic drugs, PPM, ICD, PTCA, ablation, surgery, etc)

► Reflex (VVS and orthostatic syncope)
  ► Education & awareness of triggers
  ► Fluids (2-3L/day) and salt (10g/day)
  ► Physical counter-pressure manoeuvres (leg crossing)
  ► Rapid cool water ingestion
    ► may ameliorate post-prandial hypotension and orthostatic intolerance
  ► Head of bed elevated by 10°
    ► prevents nocturnal polyuria
Treatment II

- Compression stockings
  - for venous pooling
- Fludrocortisone
  - at 50-300 mcg od
  - Evidence not great but seems to reduce or ameliorate events in many cases
- Midodrine (an alpha agonist)
  - At 5-20 mg tds
  - Not a huge amount of evidence (unlicensed in UK)
  - Effective at elevating BP
Sources of information

► Guidelines for the diagnosis and management of syncope (version 2009)

► Map of Medicine – Syncope
  ▪ Continually updated (March 2011) – valid through Feb 2012
Heart Failure

84 year old male
History

► Short of breath on minimal exertion

► PMH

- Anterior myocardial infarction 10 yrs ago
- Triple vessel CABG 9 years ago
- PTCA to one graft 4 years ago

► Current angiogram

- Grafts all patent
- Chronic occlusion of RCA
- No amenable target in LAD or Cx vessels
- LV ejection fraction very poor
Examination

- Mildly centrally cyanosed
- Oedema to knees bilaterally
- Small amount of apparent ascites
- Mobilizing slowly
- Blood pressure already low
  - 105/70 mmHg
Investigations

► Electrocardiogram
  ▪ Sinus rhythm at 60/min
  ▪ Q-waves inferiorly (old MI)

► Echocardiogram
  ▪ Ejection fraction 10-20%
  ▪ Moderate Mitral regurgitation
  ▪ Pulmonary artery pressure high (55mm Hg)

► Natriuretic Peptides
  ▪ BNP
  ▪ NTpro-BNP

► Renal function
  ▪ Creatinine already elevated (180 mmol/L)
  ▪ Sodium already too low (120 mmol/L)
Treatments

- **Frusemide**
  - 80mg mane + 40mg at midday

- **Spironolactone**
  - 12.5mg od mane
  - Use epleronone if side effects

- **Lisinopril**
  - 15mg od nocte

- **Digoxin**
  - 62.5mc od

- **Ivrabadine**
  - Used in place of Bisoprolol or Carvedilol because of BP
  - 2.5mg bd

- **Metolozone**
  - 2.5 mg od PRN (approx x2/week)
Other treatments

- BIPAP positive pressure ventilation for acute episodes
- Inotropic support - rarely used
- Intra-aortic balloon pump – tertiary centre use (rare)
- Hemofiltration – ITU situation
Other options available

► Re-synchronisation therapy
  ► Bi-ventricular PPM +/- AICD
  ► Needs assessment (Echo / broad complex QRS)

► No other treatment options available
  ► Maximally treated
  ► Renal function deteriorating and low sodium
  ► Low BP
  ► Bradycardic already

► Community HF services (to keep out of hospital)

► Palliative care management
Heart Failure

► Establish any reversible cause
  ► Alcohol
  ► Tachycardia (Anaemia, A.Fibrillation)
  ► Hypertension
  ► Ischaemia
  ► Valve disease
  ► Thyroid disease
  ► Tamponade
Other less reversible causes

- Dilated cardiomyopathy
- Hypertrophic cardiomyopathy
- Chemotherapy induced heart failure
- Puerperal cardiomyopathy
- Pulmonary hypertension and Cor Pulmonale
- Pericardial effusion
- End stage (low BP/poor kidneys) situation
1. ACE & Beta blockers
   ARB if intolerant of ACE
2. Hydralazine and Nitrate if intolerant of ACE and ARB
   (especially if Afro-Caribbean origins)
3. Aldosterone antagonists
   spironolactone
4. ARB with the ACE and the Beta blocker
5. Bi-ventricular pacing pacing (CRT)
   with or without AICD
6. Digoxin
7. (Withdraw frusemide if able to)
Information Sources

Map of Medicine

NICE Clinical Guideline 108
Issue date August 2010
Chronic Heart Failure
Management of chronic heart failure in adults in primary and secondary care