Palpitations

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Arrhythmia from a GP Perspective

• Common presentation
• Significant social impact
• Often benign cause
• Associated with considerable morbidity
• Nevertheless potentially lethal
• Chapter 8 of NSF for CHD
Which patient do I refer?

Arrhythmia from a Patient Perspective

- “I know something’s wrong but nobody takes me seriously”

- “My heart keeps missing beats (and I am really worried I am going to die)”

- Less than 10% of patients will have a significant arrhythmia
Palpitation

• Def.: An (unpleasant) awareness of forceful, irregular, or rapid beating of the heart.

  – Instantaneous or transient vs. sustained
  – Irregular vs. regular
  – Sudden vs. gradual onset and termination

Palpitations: History

**Symptoms:**

• “flip-flopping in chest” – isolated PACs or PVCs

• “missed” beats

• “rapid fluttering in chest” – atrial or ventricular arrhythmias

• “pounding in the neck” – AV node reentrant tachycardia
Palpitations: History

**Mode of Onset:**
- Abrupt suggests paroxysmal abnormal tachycardia, though sinus tach may start abruptly in anxiety.

**Mode of Termination:**
- Abrupt suggests paroxysmal arrhythmia, though high adrenergic tone caused by arrhythmia may result in consequent sinus tach.

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Palpitations: History

**Characteristics:**
- Rapid, irregular – AF, AFL, Atrial tachycardia, multiple PACs or PVCs
- Rapid, regular – SVT, VT

**Circumstances:**
- Panic/anxiety – the chicken or the egg?
- Catecholamine excess
  - Exercise – idiopathic RVOT VT, AF
  - Emotional startle – Long QT syndrome
Precipitants

- Caffeine
- Alcohol
- Hormonal changes
  - Pregnancy
  - Menopause
- Exercise

How should I assess someone who has palpitations?

- **Assess symptoms suggesting a serious complication** from an arrhythmia including:
  - Breathlessness
  - Chest pain
  - Syncope or dizziness
- **Check blood pressure**
- **Assess risk of serious arrhythmia:**
  - Family history of premature sudden cardiac death
  - Personal history of myocardial infarction or cardiomyopathy
- **Take an ECG** including a long rhythm strip.
- **If there is uncertainty about excluding VT or compromising paroxysmal SVT seek help urgently.** Consider:
  - Faxing the ECG for immediate secondary care interpretation, or
  - Emergency admission, ensuring the ECG is included with the letter of referral.
When are palpitations likely to be an arrhythmia?

**High Positive predictive Value of:**
- Symptoms assoc. with syncope
- Symptoms during exercise
- Symptoms disturbing sleep
- Regular palpitations

**High Pre test odds or red flags:**
- Known Structural heart disease
- Family history SCD
- Personal Hx Syncope
- Male
- Increased age

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**Palpitations: Workup**

- Good history (inc. past medical & FH)
- Check FBC, U&E and thyroid function
- 12 lead ECG
- 24 hour Holter monitor
- Ambulatory ECG
  - Continuous loop event recorder
  - Event recorders with auto-activation (features of both Holter and event recorder) (e.g. Novacor)
- Echocardiogram
- Treadmill test (for sxs with or after exercise)
- Implantable loop recorder
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Sinus rhythm ECG

• May be:
  – Indicative of need for further investigations
    • Non-specific changes (e.g. TW inversion, LVH)
  – Prognostic
    • Prior MI, HCM
  – Diagnostic
    • WPW, LQTS, Brugada
    • (rarely delayed potentials or epsilon waves in ARVC)

Characteristic ECG abnormalities associated with increased risk of arrhythmia:

• Evidence of an old myocardial infarction. Example ECG.
  – Pathological Q waves
  – Inversion of T waves
  – Loss of R wave progression across the chest leads following an anterior MI.

• Left ventricular hypertrophy. Example ECG.
  – R wave in V6 greater than 25 mm.
  – R wave in V6 plus S wave in V1 greater than 35 mm
  – Axis normal or deviated to the left.

• Right ventricular hypertrophy. Example ECG.
  – Tall R wave in V1.
  – T wave inversion in V1 – V3 or V4.
  – Right axis deviation.
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- **P wave abnormalities.**
  - Peaked P waves occur with right atrial hypertrophy caused by tricuspid valve stenosis or pulmonary hypertension. [Example ECG](#).
  - Broad and bifid P waves occur with left atrial hypertrophy usually caused by mitral stenosis.

- **Evidence of Wolff–Parkinson–White syndrome.** [Example ECG](#).
  - Short PR interval.
  - Slight widening of the QRS: delta wave with normal terminal QRS segment.
  - Dominant R wave in V1.
  - Inverted T waves in V1 – V4.

- **Prolonged QT** [Example ECG](#).
  - Calculate the corrected QT (QTc) by dividing the QT/√R-R interval.
  - Normal <0.45
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WPW

• URGENT referral

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Ambulatory ECG recording

• Holter monitoring
  – 24, 48hr, 7 day tapes
  – Continuous recording
  – Patient provides event diary
  – Clinically reported events and asymptomatic episodes examined
  – Low yield

Ambulatory ECG recording

• Event recording
  – Patient connected to continuous recorder
    • “loop” recorder records continuously but also erases data if not activated
    • Patient can activate recorder and thus record retrospectively and prospectively
  – Patient connects recorder when symptomatic and records prospectively only
Ambulatory ECG recording

- Event recording with automatic arrhythmia detection
  - Combines advantages of Holter monitoring and event recording
  - Both patient and device can trigger a recording if symptoms or an arrhythmia are suspected respectively

Implantable loop recorders

- Combined arrhythmia detection and patient activation
- Up to 3 years battery longevity
- Device can be interrogated and data downloaded multiple times
“Reveal” interrogation

Exercise test

Predominantly for exertional symptoms
Echo

- LV dysfunction
  - Scar
  - Ischaemic
  - other
- LVH
- Valvular disease
- Cardiomyopathy
  - HCM
  - Dilated
  - arrhythmogenic

MRI

- If
  - Malignant arrhythmia of unknown cause
  - Frequent RVOT ectopy suggestive of runs
  - Relevant FHx SCD
- Scar (small)
- Features of ARVC
- Sarcoid
- Amyloid
- HCM
Coronary Angiogram

- Assessment of VT
  - More often scar
  - Ischemia may be important in 30% cases

VT ➔ scar
VF ➔ ischaemia

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Palpitations: Management

- Reassurance
- Beta blockers (or Ca blockers)
- Antiarrhythmic therapy
- Catheter ablation
- (ICD)
In summary

• Good history is ESSENTIAL
• Remember red flag signs!
• Investigate only those that need it
• Investigate these with most appropriate tests
• If high index of suspicion, keep testing!

References