Palpitations

Introduction

Palpitation is the sensation of an abnormally perceived heartbeat.[1] It may be rapid, irregular, or forceful heartbeats or an unusual awareness of one's own heartbeat. Sometimes it is awareness of an intermittent thump in the chest when one heartbeat is rather more forceful than the rest. The presence of palpitations does not necessarily imply pathology. Palpitations are not usually constant but tend to occur intermittently, making diagnosis a challenge at times.

Aetiology[2]

Cardiac arrhythmias

- Extrasystoles (ventricular or supraventricular).
- Tachycardias (ventricular or supraventricular. Includes atrial fibrillation (AF) and atrial flutter).
- Bradyarrhythmias (sinus bradycardia, atrioventricular block. Less commonly perceived as palpitations).
- For more information, see separate articles Atrial Fibrillation, Narrow Complex Tachycardias, Supraventricular Tachycardias in Adults, Paediatric Supraventricular Tachycardia, Ventricular Fibrillation, Atrial Flutter, Extrasystoles, ECG Identification of Conduction Disorders, ECG Identification of Arrhythmias, Anti-arrhythmic Drugs, and Defibrillation and Cardioversion.

Structural heart disease

- Valvular pathology: mitral valve prolapse, aortic or mitral regurgitation, mechanical valves.
- Congenital heart disease.
- Cardiomegaly or hypertrophic cardiomyopathy.
- Heart failure.

Psychosomatic causes

- Anxiety.
- Panic disorder.
- Somatisation disorders.
- Depression.

Systemic causes

- Hyperthyroidism.
- Hypoglycaemia.
- Fever.
- Anaemia.
- Pregnancy.
- Menopause.
- Postural orthostatic hypotension syndrome.
- Phaeochromocytoma.
- Hypovolaemia.
Medication, recreational drugs and substances

- Sympathomimetic agents: beta-2 agonists, antimuscarinics, vasodilators.
- Withdrawal of beta-blockers.
- Alcohol.
- Nicotine.
- Recreational drugs: cocaine, 'ecstasy' - methylenedioxymethamphetamine (MDMA), heroin, cannabis, amphetamines.
- Caffeine: cola, coffee, tea, Red Bull®.

Epidemiology

Palpitations are a common cause for presentation in general practice. In cardiology services, they are second only to chest pain as the presenting complaint.

In athletes, the incidence of palpitations varies from 0.3% to 70%, depending on age and type of sport. Older athletes undertaking endurance sports have the highest incidence. AF can account for up to 9% of rhythm disturbances in elite athletes and up to 40% in those with long-standing symptoms. AF has been found to be more common in competitive athletes.

History

- Establish the nature and frequency of palpitations:
  - Check what the patient means by palpitations. It should mean an awareness of the heart beating. It may really be a pulsatile tinnitus or a carotid bruit.
  - Ask the patient how often it happens, how long it lasts and if there are any precipitating or relieving factors. Sometimes people are only aware of it whilst lying down at night.
  - Determine whether the rate is regular or irregular.
  - Ask the patient to tap out the beat. This may be regular or irregular. It may be a normal rate or fast. Try to estimate the rate.
  - Ask whether the patient has palpitations at present.

- Ask about accompanying symptoms:
  - Sweating or breathlessness. These may be organic or psychosomatic in origin.
  - Chest pain. If there is associated chest pain, it may be of sinister significance.
  - Syncope or near-syncope.

- Ask about possible causative factors:
  - History or family history of cardiac disease.
  - Medication.
  - Consumption of caffeine. Palpitations may be related in time to consumption but assess daily intake too. Tea contains rather less caffeine than instant coffee whilst percolated coffee contains much more. Remember other drinks such as cola and Red Bull® contain caffeine.
  - Alcohol.
  - Smoking history. The level of nicotine in cigars tends to be rather higher than in cigarettes.
  - Consider possible use of illicit substances, especially cocaine, ecstasy and amphetamines. High levels of anxiety can also result from withdrawal of sedatives such as benzodiazepines.
  - Ask about general health and well-being. There may be great anxiety in the individual's life at present. There may be shortness of breath on exertion, loss of weight or gain in weight, with ankle oedema.

- Relationship to exercise. Onset associated with exercise is a red flag. If the problem is palpitations in a young sportsperson during training, it is imperative to obtain an accurate diagnosis before high-intensity training is resumed. The assumption has been made that palpitations occurring at rest in athletes are benign but this theory has yet to be validated.

Examination

If the person currently has the palpitations then it is easy to assess the rate and regularity of the pulse and it may be possible to obtain an immediate ECG to confirm the diagnosis. However, this is unusual. Nevertheless, it may be possible to gain useful information on examination even if the person is between attacks:

- General examination looking for:
  - General state of health.
  - Weight change.
  - Temperature.
  - Anaemia.
  - Exophthalmos (suggesting thyrotoxicosis).
  - Tremor. Ask the person to hold their arms outstretched in front of them with the palms down and to spread their fingers. A fine tremor may suggest thyrotoxicosis or anxiety. Sometimes placing a sheet of paper on the dorsum of the hand accentuates the tremor.
  - Nicotine smell/stains.
  - Ankle oedema.
• Pulse. Examination of the pulse can give a great deal of information. Firstly, assess the quality of the pulse. Establish whether it is full and bounding, rather weak or normal. Then, assess the quality of the artery. Note whether it is soft and elastic or rather rigid. The brachial artery may be a better place to assess this. Note whether the rate is regular. If irregular, it may be regularly irregular with irregularities at a constant interval or irregularly irregular with a chaotic rhythm. The former suggests ectopic beats. The latter suggests AF or atrial flutter. Count the rate over an adequate interval. This will need to be longer if the rate is irregular or slow.
• Check the blood pressure (sitting and standing).
• Examine the heart, noting the position and character of the apex beat, any parasternal heave or thrills, the normality of the heart sounds and if there are any additional sounds.

Investigations[1, 6]
Primary care clinicians are unlikely to be able to make an accurate assessment of patients presenting with palpitations on the basis of history and examination alone. A cardiac cause must be excluded and further investigation is invariably needed.

• ECG: the gold standard is a full 12-lead ECG taken at the time of palpitations. It should, however, be performed even if the palpitations have resolved. It may show an irregular rate and it is easy to deduce the type. There may be abnormalities suggestive of structural heart disease such as ischaemia, hypertrophy or cardiomyopathy. There may be occasionalectopics that are not currently causing symptoms. There may be incomplete heart block. There is a short PR interval in Wolff-Parkinson-White syndrome and Lown-Ganong-Levine syndrome and a delta wave in the former. Exclude a long or short QT interval.
• Blood tests: basic blood tests should include FBC, U&Es, TFTs, LFTs and HbA1c.
• Ambulatory ECG: if the ECG does not provide the diagnosis, the frequency of symptoms will determine the best method of recording an episode. Ambulatory ECG monitoring should be arranged in primary care if available, or via specialist referral. A 24-hour or 48-hour Holter monitor may be used for frequent events. An event monitor or self-activated recorder will be needed for less frequent symptoms.
• Echocardiogram: required if cardiomyopathy is suspected or if there are abnormal heart sounds.
• Exercise testing: if the problem is related to exercise then a treadmill ECG or stress echocardiogram is required. Sometimes there is an irregularity at rest that is suppressed on exercise. These tend to be of rather less sinister significance than an irregularity that arises on exercise. Stress testing is also needed in athletes and in those with suspected coronary heart disease. [2]
Management of palpitations in primary care

It is important where the person is currently experiencing palpitations to exclude any life-threatening arrhythmia or any complications arising from arrhythmia that might cause acute medical problems. In this situation, the diagnosis may be more easily established, along with the decision regarding the need for specialist referral and the urgency of this where required.

Assessment

Where palpitations are being experienced at the time of consultation, the following are essential:

- History:
  - Symptoms suggestive of serious underlying cardiac cause or complication (eg, breathlessness, syncope or near-syncope), onset precipitated by exercise.
  - Family history of sudden cardiac death under the age of 40.
  - Cardiac history - eg, coronary heart disease, heart failure, cardiomyopathy, valve disease.
  - Examination - assess whether haemodynamically stable by checking pulse and blood pressure.
  - ECG - where available.

Where there is a history of palpitations but there are no current symptoms, further assessment proceeds along the lines of the section "Investigations" above.

Criteria for urgent referral/admission

Arrange immediate specialist assessment in people with current palpitations and:

- Ventricular tachycardia.
- Persistent supraventricular tachycardia (SVT) not responding to the Valsalva manoeuvre or carotid sinus massage.
- Haemodynamic compromise (low blood pressure, tachycardia).
- Significant breathlessness.
- Chest pain.
- Syncope or near-syncope.
- Family history of sudden cardiac death before the age of 40.
- Onset precipitated by exercise.
- Severe systemic cause for palpitations, such as thyrotoxicosis, severe anaemia or sepsis.

Send the ECG in with the referral letter where one has been done.

Criteria for cardiology referral

Refer for specialist assessment those with:

- Changes on resting ECG including:
  - Atrial flutter.
  - SVT which has responded to the Valsalva manoeuvre or carotid sinus massage.
  - Wolff-Parkinson-White syndrome.
  - Left bundle branch block.
  - Prolonged QT interval.
  - Q waves.
  - Ventricular ectopics if they are frequent and symptomatic or if underlying heart disease is suspected.

- Suspected paroxysmal AF.
- Family history of sudden cardiac death before the age of 40.
- Sinister features in the history such as:
  - Syncope or near-syncope (eg, dizziness).
  - Onset during exercise.
  - History of cardiac disease (heart failure, valve disease, congenital heart disease, coronary heart disease).

Features of the history or results of further investigation may prompt an urgent referral.

Management in primary care

In either primary or secondary care, management is by treating the underlying cause where it is found and is amenable to treatment. Some causes of palpitations may be managed in primary care - for example, many cases of AF, anxiety, panic attacks, stimulant-induced tachycardia, postural orthostatic hypotension syndrome, anaemia of known aetiology, etc.

Lifestyle advice regarding the risk of cardiovascular risk factors should be given (smoking cessation, diet, exercise).

Advise about driving where relevant.

Prognosis

[1]

[2]
Prognosis is dependent upon the cause. It is important to diagnose the serious causes of palpitations. Where no serious disease is found, the prognosis is good and does not normally affect longevity. It may, however, be a recurrent symptom and may impair functioning and quality of life.

Further reading & references

- Wolff A, Cowan C; Ten steps before you refer for palpitations, British Journal of Cardiology, July 2009

1. Palpitations; NICE CKS, May 2015 (UK access only)
7. Assessing fitness to drive: guide for medical professionals; Driver and Vehicle Licensing Agency

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