



CLINICAL INVESTIGATIONS FROM THE RACP

# The patient with palpitations

## Cardiac, systemic or psychosomatic?

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In this series, we present authoritative advice on the investigation of a common clinical problem, especially commissioned for family doctors and written by members of the Royal Australasian College of Physicians.



### KEY POINTS

- During the initial consultation, careful history taking, physical examination and a baseline ECG often reveal the likely cause of palpitations to be cardiac, systemic or psychosomatic.
- Concerted attempts should be made by both doctor and patient to obtain an electrocardiographic recording during palpitations, as this provides the basis for a definitive diagnosis.
- Echocardiography is essential to evaluate for the presence of structural heart disease.
- Specific investigations should be performed if there is clinical suspicion of an underlying systemic condition.
- Referral of patients with documented arrhythmias to a cardiac electrophysiologist is warranted, as many may be treated effectively with catheter ablation; however, other patients may be managed by their GP or referred to a general cardiologist for further evaluation.
- Patients with benign palpitations due to isolated ectopy, anxiety or psychosomatic conditions should be treated with reassurance and counselling.

Palpitations are one of the most commonly encountered presenting complaints in general practice.<sup>1</sup> A definitive diagnosis depends on electrocardiographic recording of the heart rhythm at the time of spontaneous symptoms.<sup>2</sup> Management should address the underlying cause of the palpitations, which may fall broadly into cardiac or noncardiac categories (Box 1). Determining the underlying cause requires careful history taking, physical examination and the judicious use of investigations.<sup>3,4</sup>

*Medicine* Today 2015; 16(10): 43-47

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## 1. CAUSES OF PALPITATIONS

### Cardiac causes

#### Cardiac arrhythmias

Supraventricular ectopy, ventricular ectopy, supraventricular tachycardia, atrial fibrillation, atrial flutter, ventricular tachycardia, pacemaker-mediated tachycardia

#### Structural heart disease

Mitral valve prolapse, severe valvular dysfunction, mechanical heart valves, intracardiac shunts, dilated cardiomyopathies, hypertrophic cardiomyopathies

### Noncardiac causes

#### Systemic disorders

Pyrexia, anaemia, hypovolaemia, hypoglycaemia, pregnancy, postmenopausal syndrome, postural orthostatic tachycardia syndrome, hyperthyroidism, pheochromocytoma, arteriovenous fistula

#### Effects of medications and recreational drugs

Sympathomimetic agents, beta-blocker withdrawal, benzodiazepine withdrawal, weight loss medications, alcohol, caffeine, energy drinks, cannabis, amphetamines, cocaine

#### Psychosomatic disorders

Anxiety, panic attacks, depression, somatisation

#### Physiological palpitations

Exercise, emotional stress – consider a hidden patient agenda\*

\* Desire to discuss interpersonal or psychosocial problems.

be normal, slow or rapid, and the rhythm regular or irregular. Irregular palpitations may be caused by atrial fibrillation, supraventricular tachycardia with variable atrioventricular conduction or frequent ectopy of atrial or ventricular origin.<sup>1</sup> Missed or skipped beats occurring at rest are extremely common complaints and usually signify benign isolated ectopy.

### Characterise the pattern of palpitations

The pattern of palpitations can be characterised by determining how often the palpitations occur and how long the episodes last. Palpitations may be short-lived or persistent and may occur once to several times daily, weekly, monthly or yearly. The patient should be asked to describe one or two of the most severe episodes, as not infrequently there is more than one pattern of palpitations. The more prominent and distressing pattern should be identified by the patient.

There may be specific factors that trigger the palpitations. Palpitations may normally follow intense exercise, emotional stress or postural change, and in this setting are generally brief and disregarded by healthy individuals. If the patient decides to bring these palpitations to the attention of their doctor then they may be experiencing exaggerated symptoms, signalling the presence of an underlying organic pathology, a psychosomatic disorder or a hidden patient agenda, such as the need to discuss issues of interpersonal conflicts or psychosocial stressors. Triggers associated with adrenergic activation may induce palpitations by causing cardiac arrhythmias, by increasing cardiac contractility and/or through psychological mechanisms. Medications and drugs are frequently reported triggers of palpitations.

Palpitations that start and stop abruptly are more frequently due to cardiac arrhythmia. Episodes of palpitations may end spontaneously. Vagal manoeuvres or drug administration may slow or terminate some arrhythmias. Patients often

report that bed rest reliably terminates their palpitations, although this helps little in establishing a diagnosis.

### Determine whether associated symptoms are present

The presence of associated symptoms will help in reaching a diagnosis. Syncope warrants urgent evaluation to differentiate benign causes such as vasovagal events from more serious causes, including potentially lethal cardiac arrhythmias or decompensated heart failure. If the palpitations are accompanied by breathlessness or faintness, this may reflect a degree of haemodynamic compromise or anxiety. Patients with palpitations and chest pain suggestive of angina should be evaluated for underlying coronary artery disease.

### Relevant background history

It is important to collect details of the patient's background history. Relevant details to ask about include:

- occupation
- involvement in sport
- previous cardiac disease
- previous thyroid disease
- other medical conditions
- previous depression, anxiety or psychosomatic conditions
- family history of cardiac conditions, unexplained fainting spells and unexpected death
- medical and recreational drug use around the time of episodes.

### Physical examination

Patients are normally asymptomatic at the time of clinical evaluation. Physical examination is directed at finding evidence of:

- ongoing arrhythmia
- cardiomyopathy/heart failure
- vascular disease and risk factors
- structural heart disease, including valvular disease
- prior cardiac surgery or device implantation
- signs of systemic disease.

## History taking

### Establish that the patient is describing palpitations

When taking a history from the patient, it is first important to establish that the symptoms the patient is describing are palpitations. The patient should be asked what the feeling is like. 'Palpitations' describes the uncomfortable awareness of the heart's pulsations. The term is sometimes used loosely by patients to refer to chest pain or pulsatile tinnitus.

It is helpful for the patient to tap out the beat of the palpitations. The rate may

## Initial investigations

Establishing the patient's heart rhythm during palpitations is crucial to differentiating between cardiac arrhythmias and other potential causes and is therefore central to definitive diagnosis.<sup>2</sup> Unless the patient clearly describes infrequent isolated ectopy in their history (i.e. skipped beats, missed beats or intermittent slow heavy beats with no associated symptoms), reasonable efforts should be made to acquire electrocardiographic evidence of isolated ectopy using one of the methods below. Other investigations including echocardiography are important adjuncts to diagnosis.

### Electrocardiography

Electrocardiography (ECG) is an essential element of the initial evaluation. A 12-lead ECG should be performed for every patient presenting with palpitations. The recording must be identified, dated and time stamped, and the presence or absence of symptoms at the time of the recording documented.

The patient should be provided with a copy of the ECG for future reference by other healthcare professionals. If prior ECGs and ambulatory monitoring have failed to capture symptomatic episodes, then patients should be advised to report to an emergency department or medical practice immediately for a 12-lead ECG when they experience prolonged or severe palpitations that have not yet been diagnosed, and retain a copy of the ECG for future reference.

### Holter monitoring, event monitoring and exercise stress testing

Patients with daily or weekly symptoms warrant 24-hour or seven-day Holter monitoring. Mobile ECG monitoring devices may be fitted to smart phones and allow the recording of a single-lead ECG.<sup>5</sup> A symptom diary is required for correlation with recordings. Exercise stress testing may be required to reproduce exercise-induced palpitations and is generally organised by a cardiologist.

### Interrogation of implanted cardiac devices

Patients with implantable pacemakers, cardioverter defibrillators and loop recorders who are experiencing palpitations should be referred to their treating cardiologist for device interrogation, which may provide documentary evidence of an arrhythmia.

Implantable loop records, typically used in the investigation of syncope, may be useful in selected patients with severe, sporadic palpitations, where other investigations have failed to identify their cause. Several devices are available, some the size of a USB memory stick or smaller. They are implanted in the left pectoral region and continuously monitor the patient's cardiac rhythm, recording episodes either when automatically detected or patient activated (using a remote controller).

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**The patient should be provided with a copy of the ECG for future reference by other healthcare professionals.**

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### Cardiac imaging

Echocardiography is essential to evaluate for the presence of structural heart disease.

### Other initial investigations

Specific tests should be performed if there is clinical suspicion of an underlying systemic condition. These may include a full blood count, thyroid function test, measurement of plasma and urinary metanephrine and electrolyte levels, and urine drug screening for illicit substances. Patients with chest pain should be evaluated for coronary ischaemia.

### Management

A suggested algorithm for the management of patients with palpitations is shown in the flowchart.

### Ectopic beats

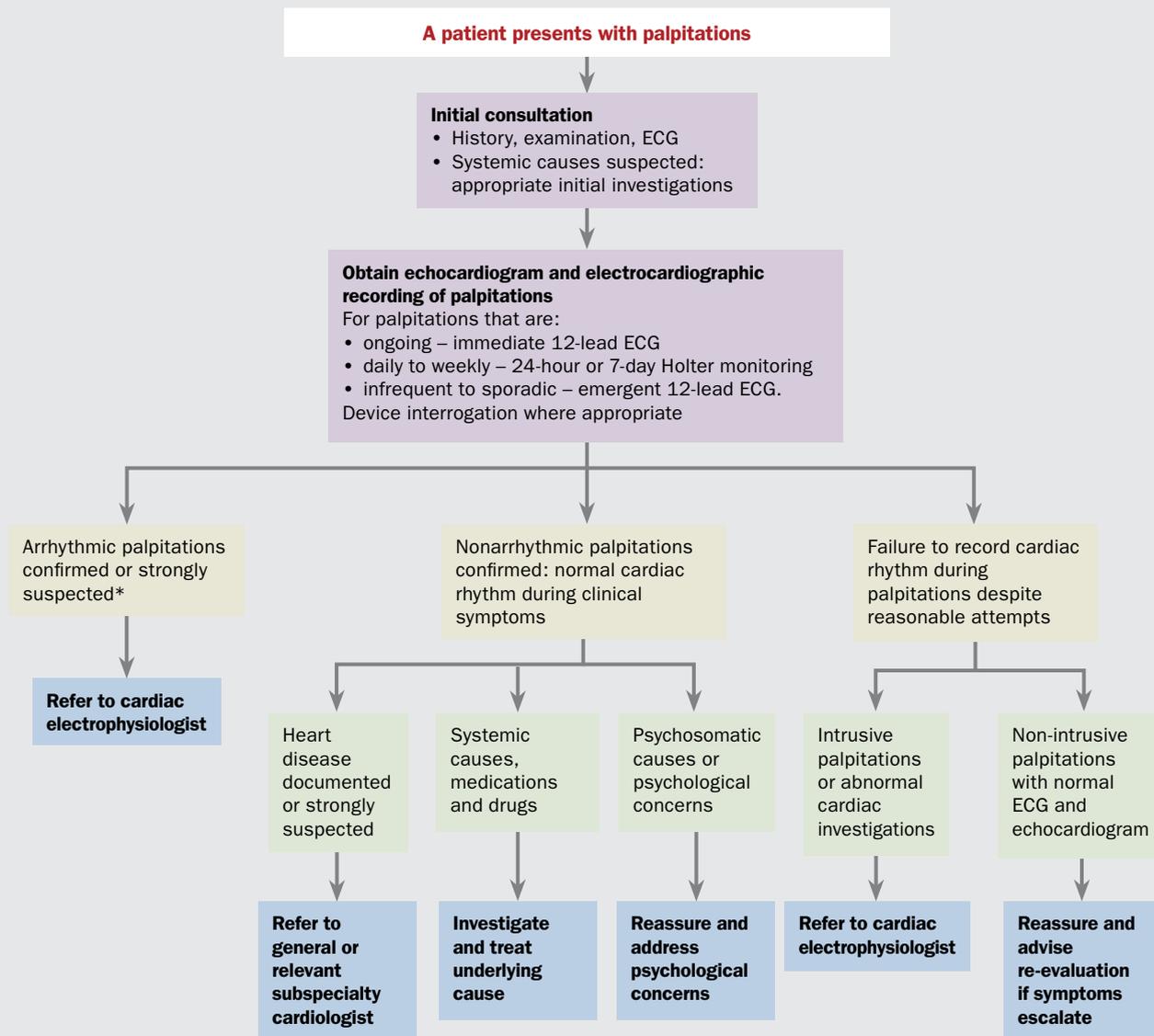
An important and common cause of palpitations is a heightened awareness of one's own heart beat – either the normal beat or atrial or ventricular ectopic beats. Although this is often considered by clinicians to be a 'psychosomatic' condition, patients often have no other psychological issues except maybe some anxiety. The key management strategy is to listen carefully to the patient, exclude another cause, exclude underlying heart disease and then to explain the phenomenon to the patient.

An ectopic beat can be described as an early inefficient beat often followed by a pause and then a stronger beat as the rhythm resets itself. Some people feel the missed beat, some feel the following stronger beat and many feel nothing at all. Just this explanation is often enough to reassure the patient and stop the sensation whereas a simple 'they're only ectopics – don't worry' is usually not sufficient. If frequent symptoms persist despite reassurance, or if Holter monitoring reveals very frequent ventricular ectopy (>10,000 beats per 24 hours), or if the left ventricle is structurally or functionally abnormal, then referral of the patient to a cardiologist is warranted.

### Other documented arrhythmias

Patients with documented arrhythmias, except for infrequent ectopy, should be referred to a cardiac electrophysiologist for appropriate counselling and review of their treatment options, as many can potentially be treated effectively with catheter ablation.<sup>6,7</sup> Accurate diagnosis of the culprit arrhythmia is assisted greatly by providing the specialist with copies of all relevant ECG and Holter monitor recordings for review. As described above, one of the most common ECG findings in patients reporting palpitations is isolated atrial ectopy. Depending on clinical experience, this benign finding can often be managed at a primary care level. Avoidance of adrenergic substances and reassurance of the patient

**SUGGESTED ALGORITHM FOR THE MANAGEMENT OF A PATIENT WITH PALPITATIONS**



Abbreviation: ECG = electrocardiogram.

\* Arrhythmic palpitations are strongly suspected if:

- palpitations are consistently of sudden onset and offset
- palpitations are rapid and reliably terminated by vagal manoeuvres
- palpitations are exercise induced
- palpitations are rapid and associated with syncope or severe breathlessness
- ventricular pre-excitation is present on ECG

that the condition is benign may be sufficient to control symptoms.

For patients in whom normal sinus rhythm is recorded during spontaneous symptoms, an underlying cardiac or

noncardiac cause should be sought. Patients showing objective evidence of cardiac disease require specialist evaluation by a general or subspecialty cardiologist. Those with systemic disorders such

as thyrotoxicosis should be investigated and managed accordingly. Palpitations due to the effects of medications and recreational drugs are generally self-limiting and readily reversible with the

## 2. INDICATIONS FOR INPATIENT MANAGEMENT OF PATIENTS WITH PALPITATIONS

- Incessant supraventricular or ventricular tachyarrhythmias requiring termination or catheter ablation
- Suspected or confirmed potentially lethal ventricular arrhythmias requiring further investigation or cardiac device implantation
- Bradycardia requiring pacemaker implantation
- Severe structural heart disease
- Haemodynamic compromise
- Decompensated heart failure
- Social or psychological decompensation

appropriate medication or lifestyle changes.

Often, the infrequency of symptoms makes electrocardiographic documentation during palpitations challenging. Definitive diagnosis often requires patience, and management proceeds on the basis of a probable diagnosis.<sup>1</sup> For most patients with noninvasive symptoms and normal results on cardiac investigations, no specific therapy for the palpitations is warranted beyond reassurance and re-evaluation should the symptoms escalate. For those with probable supraventricular tachycardia, instruction on the use of Valsalva techniques is most useful, although specialist referral of the patient would also be warranted. Here, the potential frustration for both patients and physicians can be avoided through the use of clear communication and of appropriate counselling regarding the benign nature of the palpitations.

In patients with intrusive palpitations or abnormal results on cardiac investigations, referral to a cardiac electrophysiologist is warranted for further investigations, such as loop recorder implantation, electrophysiological studies and cardiac magnetic resonance imaging.

Where clinical evaluation reveals no cardiac explanation for the symptom of

palpitations, the possibility of a hidden patient agenda should be explored using an empathic and nonconfrontational approach. Hidden agendas may include the need to discuss issues of interpersonal conflicts or psychosocial stressors.

Finally, although most patients with palpitations may be managed on an outpatient basis, hospitalisation may be required for those requiring inpatient investigations and/or emergent treatment. Indications for inpatient management are listed in Box 2.

**Definitive diagnosis often requires patience, and management proceeds on the basis of a probable diagnosis.**

### Conclusion

Palpitations are a common complaint that requires careful clinical assessment and the judicious use of investigations to distinguish benign and serious causes. Although many patients can be managed at the primary care level, those in whom underlying cardiac or systemic conditions are demonstrated or strongly suspected should be referred to the appropriate specialist for further evaluation. **MT**

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COMPETING INTERESTS: None.

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