

HCFI Dr KK Aggarwal Research Fund

Minutes of an International Weekly Meeting on “Approach to a Patient with Palpitations”

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- Palpitations are very common. Studies have found that at least one-third are due to anxiety or panic disorders; ~40% can be due to some serious cause such as cardiac disorder and one-tenth are due to drugs or medications, which may include sympathomimetics, drug abuse, substance abuse. This is an important but often missed cause of palpitations. This history should be elicited in people complaining of palpitations.
- There can be noncardiac causes of palpitations as well. Palpitation is awareness of one's heartbeat, normal or abnormal. Normal can be after exertion or fright. Abnormal but physiological causes are pregnancy, anemia and fever. But there can be abnormal unphysiological situations for which different mechanisms exist such as cardiac (electrical and mechanical problems), vascular issues and extracardiac mechanisms (thyroid, drugs).
- The approach to a patient with palpitations depends on the setting of the patient contact, whether in the emergency room (ER) or the outpatient department (OPD).
- Patient who comes to the ER with palpitations should be considered serious. Assess ABC first and then rule out serious causes. Quickly do an ECG (electrocardiogram) and focused history to rule out heart disease. The basic aim of palpitation workup is to differentiate between benign and serious causes for triage, cardiac and extracardiac causes, assess structural status of heart. To find out who requires assurance/clinical follow-up, who requires further cardiac testing and who requires treatment.
- The overall prognosis and treatment is to a large extent dependent on the presence or absence of structural heart disease.
- Palpitations with a history of syncope, history of heart disease, extreme ages, hemodynamic instability, heart murmur and abnormal ECG should be considered serious. Syncope is a sign of severe arrhythmia or structural heart disease.
- Elicit a history of what happened before palpitations, i.e., what event triggered the palpitation (such as exertion, sleeping, posture, fever, stress) and what happened during the palpitations (onset, other symptoms, mode of termination).
- A family history of sudden death is important. This is true for channelopathies like long QT syndrome, etc. where the symptoms are very atypical and since the heart function is normal and the ECG look almost normal, these patients are treated as psychological disorder or are put on antiepileptics. They are more prone to sudden death.
- Palpitations during exercise are mostly serious. Ventricular arrhythmia, long QT syndrome, atrial fibrillation (AF) are all serious diseases and are brought on by exertion. Often symptoms are a clue to the etiology. If palpitations are associated with anxiety or panic, there are overlapping or multiple symptoms especially in young women.
- History of the episode should include details about the rate, irregularity, termination, long duration episode, long history, dizziness/presyncope/syncope.
- In paroxysmal supraventricular tachycardia (PSVT), at extremes of age (geriatric) or compromised heart function, even a simple AF can cause dizziness.
- In 50% of patients, the ECG may not provide any clue. A short PR interval and a delta wave indicate Wolff-Parkinson-White (WPW) syndrome and the associated arrhythmia is PSVT.
- Presence of epsilon wave and incomplete right bundle branch block (RBBB) are diagnostic of arrhythmogenic right ventricular dysplasia/cardiomyopathy (ARVC). Long QT is associated with polymorphic ventricular tachycardia (VT).
- Anxiety or panic disorder may occur in 15-30% of patients with palpitations. Typically seen in younger people especially in women. A clue to this is lot of somatization, emotional distress. There are multiple symptoms related to multiple organs. A simple question can help in diagnosis: “Have you experienced brief periods, for seconds or minutes, of an overwhelming panic or terror that was accompanied by racing heartbeats, shortness

- of breath or dizziness?" Never brand someone as anxiety disorder without ruling out cardiac causes.
- If structural heart disease or arrhythmic cause of palpitations is suspected or there is history of syncope, then do an echo. If there are almost daily symptoms or AF is suspected, then do a Holter. Ectopics are a very common cause for palpitations.
 - Premature ventricular complexes (PVCs) are often not sensed by the pulse oximeter in the periphery. Even if no symptoms, the oximeter shows a very low pulse rate.
 - Refer the patient to a cardiologist if there is history of syncope, abnormal ECG/echo, family history of sudden death, documented tachycardia on ECG/monitor and recurrent palpitations of likely arrhythmic etiology despite management.
 - There are certain pitfalls to be avoided such as syncope does not have tonic-clonic movement or incontinence, a person with palpitations and no tachy or bradycardia on ECG can be safely discharged, a cardiac patient with palpitations but no hemodynamic problem is safe, a stable patient with wide QRS tachycardia is likely to have SVT and that patient on anxiolytics should not be investigated further.
 - If there is no history of significant heart disease or on examination and the ECG is normal (rate and morphology), then the patient can be considered for discharge, e.g., in long QT syndrome, the ECG looks absolutely pristine except QT is prolonged but is often missed by people.
 - Keep cardiac patients with palpitations for an extended period of time in the ER as they have high chances of recurrence of arrhythmia.
 - Atrial flutter is a common reason in the elderly. This can occur in either the left or the right atrium, more commonly in the right atrium. It often looks like sinus tachycardia. The sawtooth pattern on ECG is characteristic of atrial flutter.
 - In atrioventricular nodal re-entrant tachycardia (AVNRT), the ECG shows pseudo S waves in the inferior leads because of inverted P wave at the end of QRS. This also causes pseudo R' pattern in V1, which is typical of AVNRT. ST depression is one sign of AVNRT.
 - Presence of delta wave and slurred onset of QRS which is wider, then this is WPW syndrome.
 - FBI (fast broad irregular) tachycardia is a very serious rhythm. If this is seen on the ECG, then shock to the heart must be given.
 - Atrial ectopics appear as sinus rhythm but the preceding P wave has abnormal morphology. This gives a clue that the ectopics can be due to atrial tachycardia or AF. A fragmented P wave may be a clue that the palpitation is due to AF. Atrial tachycardia can be easily demonstrated in most patients by showing AV dissociation. Lead V1 is good for seeing P waves.
 - ARVC is a very common cause of sudden death in young people. It is a very common cause of exercise related sudden death in young people. The characteristic feature is overall the voltage of the complexes is low, there is RBBB pattern and a notch at the end of QRS. This notch causes the epsilon wave, which is a pathognomonic sign of ARVC. The QT interval and size of P wave is varying with every beat, this is called QT alternans and is a sign of risk of sickle cell disease in these patients.
 - If there are PVCs on ECG, it is highly suggestive that these may be the cause for palpitations.
 - Another important cause in young people is hypertrophic cardiomyopathy. It can be due to AF which is very common as well as ventricular ectopics and VT. In such patients, if VT occurs, there is good enough chance that the VT will recur in the next 24 hours. So, prolonged monitoring of these patients is required.
 - People with long QT syndrome and Brugada syndrome will always have palpitations that are followed by presyncope and syncope.
 - In catecholaminergic polymorphic ventricular tachycardia (CPVT), classically there are bidirectional complexes. The treatment is beta-blocker. Stable VT can become unstable as the rate picks up. These patients require hospitalization.
 - Always think of the context and the physiological situation in which you are seeing the patient. When reading the ECG, also look at the morphology in addition to the rate and rhythm.
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