



# Pediatric Clips

## Heart Palpitations — Michael Ralston, MD

April 2003 • Volume 1 • Issue 5

Pediatric Clips from The Children's Medical Center are quick reviews of common pediatric conditions.

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### CASE

A mother brings her infant into the office because of his heart "beating hard" when she places her hand on his chest. A young boy is brought by his parents

because his "heart is racing" when he plays soccer. A 16-year-old enters with the complaint of dizziness associated with shortness of breath and chest pain with what

she feels is an irregular heartbeat. How would you handle each of these scenarios?

### RESPONSE

Palpitations are defined as forceable pulsations of the heart perceptible to the patient usually associated with an increase in frequency, with or without an irregularity in rhythm.<sup>1</sup> Palpitations are neither sensitive nor specific. Palpitations can occur with normal cardiac rhythm, while life-threatening cardiac rhythms can be asymptomatic.

The key to accurate diagnosis and effective treatment begins with a thorough history.<sup>2</sup>

1. Can you describe the symptoms? Children able to describe the symptoms should be encouraged to do so. Young children may have difficulty in verbalizing their symptoms and parental reports can be useful.
2. How long has the patient had symptoms? How many episodes have occurred?
3. How often do the episodes occur? This question allows selection of testing most likely to lead to a diagnosis.
4. How long do the episodes last? Patients noticing irregular heartbeats or "skipped heartbeats" lasting only seconds in duration require different monitoring than those with sustained episodes.

5. Are there particular events that make the episodes occur? Exercise may be an important precursor. This information allows development of an appropriate strategy to monitor such events.
6. What do you typically do when you have an episode? Children may have learned to self-perform a Valsalva maneuver to terminate a re-entry type tachycardia. Other patients may report the episode gradually resolves. Episodes that have a gradual onset and gradual resolution are less likely to be arrhythmogenic than those with sudden onset and termination.
7. How does the patient appear during an episode? It is more worrisome if the patient looks pale, has dizziness, or appears quite frightful during the episode.

A complete physical examination is equally important. Abnormalities in the examination should be evaluated because the prognosis of an arrhythmia depends on the presence of underlying cardiac disease. Premature ventricular contractions in a structurally

normal heart are likely benign. The same rhythm in a patient with structural heart disease may not be benign. One should also be aware that children with rhythm problems may have a completely normal cardiac examination.

From the history and examination, one should have an idea of the patient's diagnosis. Adjunctive testing is now useful to definitively determine the diagnosis. All patients should have an electrocardiogram to identify risk for arrhythmias (eg, long QT syndrome or the presence of pre-excitation). It can also identify hypertrophied chambers or abnormal conduction intervals. Pediatric electrocardiograms should be performed and interpreted by those experienced with pediatric standards.

Ambulatory electrocardiographic monitoring (Holter monitor) is useful for patients experiencing symptoms daily and event monitoring is beneficial for those with infrequent symptoms. Event monitors are of three basic types. The first is applied and a recording performed at the time of symptoms. Another type has loop

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Continued from the front.

memory such that the patient wears the monitor continuously and, when symptoms occur, presses a recorder button. Finally, a third type of monitor is surgically placed subcutaneously in the pectoral area. Once an event occurs, the patient reports to their cardiologist to have the information transmitted.

Once the diagnosis is determined, therapy can be initiated. Many reporting palpitations have normal chronotropic and/or inotropic variation in their heart rate. They are able to sense this causing anxiety. Reassurance can be given to these patients. Those with structurally normal hearts and isolated premature atrial or ventricular contractions can also be reassured. Patients with palpitations related to other problems such as hyperthyroidism, anemia and fever can have sinus tachycardia but it is not harmful and the underlying disease process needs corrected. Finally, some will have arrhythmogenic etiologies. These require medical, surgical, or electrophysiologic therapy depending on their unique circumstances, prognoses, and underlying disease processes. A discussion of specific therapies for each rhythm problem is beyond the scope of this text but consultation with your pediatric cardiologist is essential for effective management.

In summary, evaluation of palpitations starts with a complete history and physical examination. Important general principles are:<sup>3</sup>

1. Symptoms of palpitations vary depending on age.
2. Documenting the event is essential before advancing a diagnosis or initiating treatment.
3. The urgency of an evaluation depends on the symptoms experienced and the likelihood of structural heart disease.
4. Physical examination may be normal even in those with serious rhythm problems.
5. Adjunctive testing should be performed and interpreted by those familiar with pediatric norms.
6. Therapy is guided by the specific arrhythmia, symptomatology, presence of structural disease, and each patient's unique clinical circumstances.

## REFERENCES/ RESOURCES

1. Stedman's Medical Dictionary 23rd Edition Baltimore:Williams and Wilkins, 1976.
2. Garson A. Palpitations. In: *Clinical Pediatric Arrhythmias*, 2nd ed. Philadelphia:WB Saunders, 1999:303-305.
3. Case CL. Diagnosis and Treatment of Pediatric Arrhythmias. In: *Pediatric Clinics of North America*, vol 45, no 2. Philadelphia:WB Saunders, 1999:347-354.

## Featured specialist



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Nonprofit Organization  
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Funding provided by:



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