

Arrhythmogenic Causes of Chest Pain in Children

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KEYWORDS

• Chest pain • Arrhythmia • Pediatric

Arrhythmias are common causes of chest pain of cardiac origin in children, both with and without structural heart disease. Children frequently describe feelings of “chest pain” when experiencing not only myocardial ischemia, but also a multitude of other “discomforts,” such as those associated with palpitations, irregular heart beats, or even abdominal pain, as young children often have difficulty localizing pain. Thus, a broad differential is necessary when evaluating chest pain in children.

Although chest pain in adults often heralds myocardial infarctions, these are uncommon in children. Chest pain in children, if it is of cardiac origin, however, and especially if it is from an arrhythmia, can signal an impending cardiac arrest. The greatest challenge is to distinguish cardiac chest pain from the multitude of noncardiac causes, including musculoskeletal, pulmonary, and gastrointestinal, and anxiety. This is best accomplished with a thorough and systematic evaluation plan.

EVALUATION OF CHEST PAIN IN CHILDREN

A careful history of the present illness, including associated signs and symptoms; type, location, and duration of pain; and positions or activities that make the pain better or worse should be ascertained (**Box 1**). Past medical, surgical, and family histories should include cardiac conditions and the use of drugs or potential exposure to drugs, either prescription or recreational. Chest pain associated with exercise, palpitations, shortness of breath, diaphoresis, lightheadedness, syncope, or positive medical, surgical, or familial cardiac history is particularly concerning for arrhythmias. Physical examination should include cardiac palpation for the presence of cardiac

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Box 1**Questions to ask when evaluating chest pain**

1. Is the chest pain acute or chronic?
2. How often does the pain occur?
3. Where is the pain located?
4. What is the quality of the pain? Is it sharp, dull, squeezing, or pressing?
5. Does it radiate? Especially to the jaw or left arm?
6. How long does the pain last?
7. What makes the pain occur?
8. Is it activity related?
9. What makes the pain resolve?
10. What medications do you take to relieve the pain?
11. Do you have palpitations, skipped, or fast heart beats?
12. Are there other associated symptoms?
13. Do you get lightheaded or dizzy?
14. Do you ever faint?
15. Are you more fatigued lately, especially with exercise or when you have chest pain?
16. Are you short of breath when you have the chest pain or at other times?
17. Is the pain precipitated or increased by breathing or movement?
18. Is the pain less when sitting or lying down?
19. Is the pain worse when touching the area of the chest that hurts?
20. What type of exercise have you been doing lately?
21. Have you been lifting weights?
22. What else would you like to tell me about your chest pain?
23. Does anyone else in your family have chest pain?
24. Are you worried about anything or are there recent stresses in your life?

enlargement; thrills or heaves; auscultation for murmurs, clicks, rubs, or gallops; and inspection for signs and symptoms of congestive heart failure, such as pulmonary congestion with wheezes and rales, jugular venous distension, edema, and/or liver enlargement. Abnormalities on cardiac examination may indicate structural heart disease or congestive heart failure. Signs of heart failure may be the result of a primary structural defect or secondary to decreased output, as the result of arrhythmia. Of note, arrhythmias and myocardial ischemia in infants and young children may manifest as colic or irritability or other signs or symptoms of congestive heart failure.

LABORATORY AND OTHER TESTS TO EVALUATE CHEST PAIN OF ARRHYTHMIC ORIGIN

Electrocardiogram

The electrocardiogram (ECG) should be used to determine the presence of an abnormal heart rate or rhythm and the type of abnormality. It can also identify the presence of ischemia. An ECG is recommended in any child with chest pain who has an

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