A Teen with Chest Pain

Jennifer M. Blake, MD

KEYWORDS

• Chest pain • Cardiac • Noncardiac • Teen • Adolescent

KEY POINTS

- Chest pain in teens is most commonly noncardiac and musculoskeletal in nature.
- Chest pain from a cardiac cause is rare in teenagers.
- A thorough history and physical examination are typically the only evaluation required for assessment of chest pain.
- Patients with a history of repaired congenital heart disease, Kawasaki disease with coronary artery aneurysms, certain connective tissue disorders, symptoms of exertional chest pain, or association with syncope should be referred to a pediatric cardiologist for further evaluation.

INTRODUCTION: NATURE OF CHEST PAIN

Chest pain is a commonly encountered symptom in the outpatient setting as well as the emergency room. The onset of chest pain in adults usually necessitates prompt cardiac evaluation because coronary vascular disease, while potentially life-threatening, can be managed and treated successfully if detected in a timely fashion. When this symptom is seen in the teenage population, teenagers and their parents are typically concerned about cardiac causes for the pain. Fortunately, chest pain in the teenage population is most commonly benign.[1–8] Media coverage of rare and unfortunate events of sudden cardiac death only contributes to teen and parental anxiety about chest pain complaints. Chest pain has been associated with higher health care utilization in children with noncardiac chest pain particularly if the parent or child has increased psychological stress.[9] These factors all add to the challenge for the medical professional who is evaluating the teenage patient with chest pain.

Chest pain has previously been reported to account for 0.29% of patient chief complaints to the emergency room in a prospective trial by Driscoll and colleagues.[1] In more recent studies, chest pain accounted for 5.2% of all cardiology consultations[10]

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Division of Pediatric Cardiology, Children's Hospital of Michigan, Wayne State University, School of Medicine, 3901 Beaubien, Detroit, MI 48201-2119, USA
E-mail address: jblake2@dmc.org

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and 15% of all outpatient visits at a large, tertiary center pediatric cardiology practice.[11] However, less than 5% of chest pain complaints are associated with a cardiac condition.[12,13] Although media attention to these episodes in the community gives the sense that these episodes occur on a more frequent basis, several studies have shown that the incidence of sudden cardiac death in teens is fortunately rare.[12–14] Most recently, Roberts and Stovitz[15] reported an incidence of sudden cardiac death in adolescents as 0.24 per 100,000 athlete-years over the last 19 years in Minnesota. Chest pain in teens is most commonly divided into noncardiac and cardiac causes.

Key message

- Chest pain is a common complaint seen in primary care office, emergency room, and pediatric cardiology practice
- Chest pain in adolescents is most commonly benign
- Chest pain in this age group is perceived as cardiac by parents and patients and associated with tremendous anxiety
- Less than 5% of the chest pain is cardiac in origin

NONCARDIAC CHEST PAIN

Musculoskeletal chest pain is a very common type of noncardiac chest pain with reported prevalence anywhere from 15% to 31%.[12,13] Several types of musculoskeletal chest pain are seen in teenagers (**Box 1**).

COSTOCHONDRITIS OR COSTOSTERNAL SYNDROME

Costochondritis or costosternal syndrome typically presents as a sharp, stabbing pain along 2 or more contiguous costochondral joints. Deep breathing usually exacerbates the pain and this pain usually lasts just a few seconds to a few minutes. Signs of joint inflammation are absent, but palpation of the chest over the area reproduces the pain.

TIETZE SYNDROME

Tietze syndrome is most often seen in teens and adults. There is frequently a history of recent upper respiratory infection. Excessive coughing is thought to be a possible mechanism. There is localized inflammation of a single costochondral joint with the second and third ribs most often involved. Signs of inflammation, such as warmth, swelling, and tenderness, are found at the specific costochondral, costosternal, or sternoclavicular joint involved. Signs of inflammation are what helps differentiate this from costochondritis.

TRAUMA AND MUSCLE STRAIN

Trauma and muscle strain are particularly common in teenagers who are active in sports and are prone to chest wall trauma or muscle strain. Skeletal trauma in one series was the cause of chest pain in 2% of teenagers and children.[12] If trauma is the underlying cause, there may be inflammation or signs of injury at the site of pain. In cases where the history of trauma is significant, signs or symptoms of hemopericardium and myocardial contusion should be evaluated. Weight training or history of heavy lifting is often underreported unless specifically asked in cases where muscle strain is suspected to be the source of the chest pain.