

Chest Pain and Chest Wall Deformity

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KEYWORDS

- Chest pain • Cardiac • Musculoskeletal • Pulmonology
- Pectus deformity • Ischemia

Chest pain is a relatively common complaint among pediatric patients and presents a diagnostic challenge that is associated with significant emotional as well as monetary costs. Patients as well as their families are often concerned about life-threatening causes for the chest pain, although these are rarely identified. There are numerous etiologies for pediatric chest pain and **Box 1** lists the differential diagnosis of chest pain in children.

The clinician's primary goal in evaluating the pain, whether it is in a primary care office, cardiology clinic, or the emergency department (ED) setting, is to identify the serious causes and rule out other organic pathology. Similarly, chest wall deformity can also be of great concern to patients and their families. The goal in evaluation and treatment of patients with chest wall deformity should be to maximize lung growth and function as a child grows and to minimize related psychologic problems.

Table 1 describes the levels of evidence for studies discussed in this paper.

CHEST PAIN

The frequency of pediatric chest pain among different EDs has been shown to be anywhere between 0.3% (Level of evidence [LOE] 2, **Table 1**)¹ and 0.6% of all visits (LOE 2).^{2,3} In an earlier study (LOE 2),⁴ the occurrence rate of chest pain in the ED, cardiac clinic, and primary care physician's office in one hospital was found to be 0.288%. One of these studies (LOE 2),¹ while finding very few "serious" causes of chest pain, noted that almost 90% of patients considered the pain to be at least "moderate or severe" in intensity; at least half of the patients interviewed by a psychiatrist in another study were worried about the pain being related to their "heart" (LOE 2).⁴

Given the perceived severity of pain and the surrounding anxiety about heart problems and presumably other life-threatening problems, it would be useful to have an evidence-based guide for chest pain that allowed efficient identification of

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Box 1**Differential diagnosis of pediatric chest pain***Cardiac*

Coronary artery disease-ischemia/infarction

Anomalous coronary arteries

Kawasaki disease (coronary arteritis)

Diabetes mellitus (long standing)

Arrhythmia

Supraventricular tachycardia

Ventricular tachycardia

Structural abnormalities of the heart

Hypertrophic cardiomyopathy

Severe pulmonic stenosis

Aortic valve stenosis

Infection

Pericarditis

Myocarditis

Gastrointestinal disorders

Reflux esophagitis

Pill induced esophagitis

Esophageal foreign body

Psychological disorders

Stress-related pain

Musculoskeletal disorders

Chest wall strain

Direct trauma/contusion

Rib fracture

Costochondritis

*Idiopathic**Pulmonary/Respiratory disorders*

Severe cough

Asthma

Pneumonia

Pneumothorax/pneumomediastinum

Pulmonary embolism

Miscellaneous disorders

Sickle cell crisis

Abdominal aortic aneurysm (Marfan syndrome)

Pleural effusion (collagen vascular disease)

Shingles

Pleurodynia (coxsackievirus)

Breast tenderness (pregnancy, physiologic)

Chest mass

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