

Brief View of Chest Pain in Children

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Abstract

Introduction: Chest pain is a Common cause of referral in the children to the cardiology clinic but, unlike in adults, in children the cardiac cause is rare (98% is non-cardiac).

Common Causes of Chest Pain: Costochondritis, Injury, Stress or Anxiety, Precordial Catch Syndrome, Acid Reflux, Idiopathic.

Cardiac Causes in Children Include: Pericarditis, Coronary Artery Abnormalities, Prolapse of Mitral Valve, Arterial Aneurysm, Hypertrophic cardiomyopathy, Abnormal heart rhythms.

Other Causes of Chest Pain: Pneumothorax, pleural effusion or inflammation in the chest as well as lung infections and asthma.

Investigations: Cardiac investigations include ECG, Echocardiogram and Exercise ECG.

Other Investigations: Chest XR, labs: like CBC (Complete Blood Count), CRP (C reactive protein), ESR (erythrocyte sedimentation) and blood cultures is reasonable in patients with suspected lung infections.

Treatment: Reassurance the parents and Advise for rest and mild Analgesics, Lung or Cardiac causes the treatment will be related to the cause.

Conclusion: Chest pain in children can be a source of significant anxiety, both for the child as well as parents. Fortunately, most chest pain in children is caused by benign or self-limited, non-cardiac diseases.

Keywords: Chest; Pain; Children

Introduction

Chest pain is a Common cause of referral in the children to the cardiology clinic but, unlike in adults, in children the cardiac cause is rare (98% is non-cardiac) [1].

All chest structures can cause pain. like, the lungs, the diaphragm, the chest wall muscles, the ribs, and the chest joints.

Irritation, injury, or infection to any of these structures can be a reason for chest pain [2].

Common causes of chest pain [3]

Costochondritis

Inflammation of the “chest joint” between the breastbone and the ribs. It can occur in anyone at any age, but it is common in adolescent females.

Chest pain with true difficulty in breathing is rare and should generate concern to look for other diagnoses.

Tenderness to pressure over the costochondral joint is the hallmark of costochondritis.

Treatment: Anti-inflammatory medicine such as ibuprofen for 1 - 2 weeks.

Injury

There are many causes for injury to the bones and muscles of the chest wall.

Treatment is over-the-counter pain relievers and usually supportive management. when injury causes chest pain that is persistent, severe, or associated with breathing difficulty please consult a physician.

Stress or anxiety

Non-specific pain increases with stress or anxiety.

The common causes of stress include, school examinations, loss of a relative.

Precordial catch syndrome

It is a benign disease, no clear cause. Most common in adolescents, it has a sudden onset, sharp pain along the chest or back.

The pain with inspiration. The episode continue for several minutes then resolves spontaneously without treatment, forced deep inspiration sometimes reduce the pain, the pain can be many episodes during the day.

Although the cause not clear, no significant side effect and no specific treatment for this syndrome.

Acid reflux

It is one of or chest pain. The pain looks like a burning sensation below the sternum.

The pain related to meals. Treatment for the reflex will relieve the chest pain.

Idiopathic: No specific reason can be found.

Cardiac causes in children [4]

Pericarditis

Inflammation of the pericardium (two thin layers of a sac-like tissue that surround the heart). Self-limited infection can be the cause but also other more serious causes can lead to pericarditis.

The pain is mid-sternal and sharp, may radiate up to the shoulders.

The pain reduce with sitting position or leaning forward. The common complains breathing difficulty, fever and cough.

Coronary artery abnormalities

Congenital abnormalities due to abnormal position of the arteries or acquired like in Kawasaki disease.

The heart's oxygen supply with these abnormalities will be less and cause chest pain.

The pain mid-sternal chest pain that may radiates to the neck and chin or to the left shoulder and arm. However, we have to put on mind that children will have less specific complaints.

Breathing difficulty, irritability and sweating may also occur. So, when these symptoms occur we have to consult the doctor.

Prolapse of mitral valve

Mitral valve prolapse can associated with chest pain, without clear cause of this association.

Arterial aneurysm

Chest pain from an aortic aneurysm is rare in children.

An arterial aneurysm can lead to rupture, we suspect the aneurysm when there is some connective tissue disease like Marfan syndrome.

Other cardiac causes

- Hypertrophic cardiomyopathy - abnormal thickening of the heart.
- Abnormal heart rhythms.

Other causes of chest pain [3,4]

Other common causes of chest pain include accumulation of air (pneumothorax), fluid (pleural effusion), or inflammation in the chest as well as lung infections and asthma.

Investigations [3,4]

Cardiac investigations include:

1. Resting ECG: To rule out any heart arrhythmia.
2. Echocardiogram: To evaluate structures, function and coronary arteries.
3. Exercise ECG: When baseline ECG readings is normal, an exercise stress test may be necessary to assess the development of arrhythmia or ischemia during exertion.

Other investigations:

- Chest XR can detect pneumothorax, pleural effusion, soft tissue swelling, and fractures and identify cardiac size and silhouette abnormalities.
- Performing a complete blood cell count, CRP, ESR (erythrocyte sedimentation) and blood cultures is reasonable in patients with suspected lung infections.

Red flag signs [3-5]

When should I be concerned about chest pain refer the patient to the cardiology clinic:

- Exertional chest pain
- Exertional chest pain and syncope
- Chest pain with palpitations
- Abnormal cardiac findings
- Electrocardiographic abnormalities
- Significant family history of arrhythmias, sudden death, or genetic disorders (Marfan's)
- History of cardiac surgery or interventions
- History of Kawasaki disease
- First-degree relatives have familial hypercholesterolemia.

Treatment [3,4]

Musculoskeletal chest wall pain:

- Reassurance the parents and Emphasis the benign nature.
- Advise for rest and Analgesics like Paracetamol can be prescribed as needed, also NSAIDs can help.
- Warm compress can be helpful also.

Lung or cardiac causes:

- The treatment will be related to the cause.

Conclusion [5]

Chest pain in children can be a source of significant anxiety, both for the child as well as parents.

Fortunately, most chest pain in children is caused by benign or self-limited, non-cardiac illnesses.

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