

Costochondritis

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Continuing Education Activity

Costochondritis is a benign cause of chest wall pain that results from inflammation of the costal cartilage, the cartilage that connect the ribs to the sternum. Patients often present with chest pain; therefore, other causes of chest pain must be excluded with history and physical exam. If the patient's history and physical exam warrant additional workup, this should be done before the diagnosis of costochondritis is made. This activity reviews the evaluation, diagnosis, and management of costochondritis and highlights the role of the interprofessional team in the care of affected patients.

Objectives:

- Describe the history and physical exam findings associated with costochondritis.
- Explain how to rule out more grave causes of chest pain prior to diagnosing a patient with costochondritis.
- Describe common treatments for costochondritis.
- Explain the importance of collaboration amongst interprofessional teams when evaluating patients for costochondritis.

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Introduction

Costochondritis is a chest wall pain caused by inflammation of the costal cartilages or the area where the ribs meet the sternum, known as sternal articulations. It is a benign cause of chest pain. Patients often present with the chief complaint of chest pain; therefore, other causes of chest pain must be excluded with history, physical exam, and/or diagnostic testing prior to a diagnosis of costochondritis.

Etiology

Costochondritis is inflammatory. It is caused by inflammation of the costal cartilages and their sternal articulations, also known as the costochondral junctions.

Epidemiology

The epidemiology of costochondritis is not well established. In a small study published in 1994, there was a higher frequency of costochondritis seen in females and Hispanics. In a group of 122 patients presenting to the emergency department with chest pain not due to malignancy, fever, or

trauma, costochondritis was the diagnosis in 36 of the patients (30%).[1]

History and Physical

As with any chest pain, history of present illness, past medical history, social history, family history, and a review of systems are very important. Many deadly causes of chest pain should be ruled out prior to establishing a diagnosis of costochondritis. Consider whether the chest pain history is a concerning indicator of acute coronary syndrome, pulmonary embolism, aortic dissection, pneumonia, esophageal injury, pneumothorax, among others. If there was recent trauma or fall, consider an occult rib fracture.

Typically, if chest wall pain is due to costochondritis, the patient will give a history of the pain worsening with movement and certain positions. The pain will also typically be worse when the patient takes a deep breath. The pain quality is variable, but it may be described as sharp or dull pain.

If the patient complains of radiating pain, shortness of breath, dizziness, exertional chest pain, fever, productive cough, nausea, etc., these are worrisome for other causes of chest pain. Consider pursuing other causes of chest pain prior to establishing a costochondritis diagnosis.

A good heart and lung exam are important to help build your differential diagnosis when a patient complains of chest pain or chest wall pain. If a patient's chest wall pain is due to costochondritis, the pain is usually reproducible by mild-to-moderate palpation. Often, there is point tenderness where one or two ribs meet the sternum. One pitfall of the typical physical exam findings is that pain due to acute coronary syndrome can also be described as reproducible.[2]

Vital signs are also important. Patients with costochondritis should present with normal vital signs. If your patient is tachycardic or hypotensive, this should raise the suspicion of an alternative diagnosis as the cause of your patient's chest pain.[3]

Evaluation

The purpose of the evaluation is to determine other causes of chest pain. There is not a test to diagnose costochondritis.

Laboratory

Consider a workup for acute coronary syndrome, pneumonia, pulmonary embolism, among others if the patient's history and physical exam warrant this workup.

No laboratory evaluation is necessarily required to diagnose costochondritis. It is important to use the laboratory evaluation to evaluate for other diagnoses that are in your differential.

Radiology

A chest x-ray should be considered in all patients with chest wall pain or chest pain to rule out pneumonia, spontaneous pneumothorax, lung mass, among others.

A normal chest x-ray will be seen with costochondritis.

Other Tests

An electrocardiogram (ECG) should also be considered in all patients with chest wall pain or

chest pain to rule out abnormalities associated with infectious causes of chest pain, ischemia, among others.

A normal electrocardiogram will be seen with costochondritis.[3][4]

Treatment / Management

The treatment for costochondritis is a nonsteroidal anti-inflammatory drug (NSAID).

Some consideration can be given to a course of naproxen or meloxicam because these are dosed twice daily and once daily, respectively. Other NSAIDs can also be used, including ibuprofen. The NSAID of choice is based on provider/patient preference.

NSAIDs are contraindicated in acute and chronic kidney disease.

It is also important to discuss with patients the risk of gastritis with chronic NSAID use.

If patients have severe or refractory costochondritis, refer for outpatient follow-up. Physical therapy is a treatment option for refractory costochondritis.[5][3]

Differential Diagnosis

The differential diagnosis for costochondritis is rather long. Some of the diagnoses included are associated with major morbidity and mortality.

Acute Coronary Syndrome (ACS)

This diagnosis should be considered in any patient presenting with chest pain. If you feel the patient's history and physical are concerning for ACS, consider an ECG and troponin level to assist in ruling out ACS. The patient should also be on continuous cardiac monitoring while in the emergency department.

Pneumothorax

Consider the patient population at risk for spontaneous pneumothorax. A chest x-ray and/or point-of-care ultrasound (POCUS) can be used to assist in evaluating the possibility of pneumothorax.

Pneumonia

If the patient is complaining of a productive cough and/or fever or is high risk for pneumonia, consider this on your differential diagnosis. Pneumonia can cause chest pain in addition to the other symptoms we associate with the diagnosis. A chest x-ray, complete blood count (CBC), and a basic metabolic panel (BMP) can be helpful when considering this as a differential diagnosis. Vital signs are also important when considering this diagnosis.

Aortic Dissection

This is a medical and possibly a surgical emergency. Consider a CTA to evaluate for aortic dissection if this is a concern based on the patient's history and physical exam.

Pulmonary Embolism

Ask about pulmonary embolism (PE) risk factors, such as malignancy, recent travel, recent surgery, personal history of PE or deep vein thrombosis (DVT) and symptoms, such as shortness

of breath. Tachycardia can also be a sign of a PE. Consider using a clinical decision rule, such as PERC and Well's criteria when considering PE. A D-dimer and/or CTA can be helpful when evaluating for a PE if this is on your differential diagnosis. There may also be nonspecific ECG and POCUS changes seen.

Esophageal Perforation

The healthcare professional must have a high clinical suspicion for this diagnosis, and it is often due to an iatrogenic cause, such as a recent endoscopy. This patient's pain should be severe and unrelenting, and typically, they present in shock with abnormal vital signs.[6]

Prognosis

Costochondritis is a self-limited condition.

Complications

This is a self-limited disease. Patients may present with refractory or recurrent costochondritis. The most important part of the diagnosis of costochondritis is ensuring other, more deadly causes of chest pain have been ruled out.

Deterrence and Patient Education

Educate the patient on proper dosing of NSAIDs and the importance of not taking over-the-counter NSAIDs in addition to the prescription provided.

Educate the patient on return precautions, including worsening chest pain, shortness of breath, dizziness, and syncope.

Pearls and Other Issues

Costochondritis should be a diagnosis of exclusion. Rule out other causes of chest pain that are associated with increased morbidity and mortality. Patients typically present with chest pain worse with breathing, and it is often positional. It should be reproducible on a physical exam, and the patient's vital signs should be within normal limits. If ordered, labs, ECG, and chest x-ray should also be normal. Costochondritis is a self-limited disease. The standard of care is treatment with NSAIDs. Consider ECG and chest x-ray in all patients who present with a chief complaint of chest pain.[6]

Enhancing Healthcare Team Outcomes

Because costochondritis is a diagnosis of exclusion, it can be helpful to involve specialists when ruling out other causes of chest pain. While providers often complete the initial read of the chest x-ray and the ECG, radiology, and cardiology will complete the official reads. It is not uncommon for occult, non-displaced rib fractures to be missed on a chest x-ray following trauma, such as a fall or car accident. If there are any questionable ECG findings, it is prudent to discuss these with a cardiologist or electrophysiologist before diagnosing a patient with costochondritis.

If costochondritis becomes refractory, consider referral to orthopedics and/or physical therapy to assist with treating the patient in an attempt to improve the patient's pain. Clinicians may also

consider referrals to other specialists to evaluate for other causes of chest pain at this time, including gastroenterology and cardiology. There may be a second diagnosis complicating the initial diagnosis of costochondritis.[5][7]

Review Questions

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