

UNIVERSITY STUDENT HEALTH SERVICES • Fact Sheet

COSTOCHONDRITIS**WHAT IS IT?**

A variety of medical conditions can cause the skin, muscles, bones, tendons, and cartilage of the chest wall to become painful. A common cause of chest wall pain is costochondritis, a condition in which the cartilage that attaches the ribs to the breastbone (sternum) becomes inflamed.

Costochondritis is not a life-threatening condition but can sometimes cause significant discomfort and distress to patients. It can affect anyone but is seen more often in women and in people older than 40.

WHAT CAUSES IT?

Most cases of costochondritis have no clear cause. However, identifiable causes can include:

- Direct injury to the chest wall (eg. from contact sports, a motor vehicle accident, even a tight bear hug).
- Repetitive strain of the ribs (eg. from frequent overhead activity, coughing, weight lifting).
- Bras that fit too tightly (especially those with underwire supports).

Less common causes of chest wall pain include:

- Arthritis and other rheumatic diseases, such as fibromyalgia, rheumatoid arthritis, and lupus.
- Infections, which usually affect the joint connecting the clavicle and the sternum. These are often associated with diabetes, rheumatoid arthritis, or a history of IV drug use.
- Stress fractures, which can occur in patients with low bone mass (osteopenia/osteoporosis) or in repetitive sports activities, such as rowing or throwing.
- Tumors, both noncancerous and cancerous. Cancers originating from the chest wall are rare.

WHAT ARE THE SYMPTOMS?

Patients with costochondritis often experience localized chest wall pain from inflammation of the cartilage around the sternum. However, some patients may have multiple areas of tenderness.

❖ Chest wall pain is typically:

- Sharp but can also be dull and gnawing. Sometimes the pain radiates to the abdomen or back.
- Located on one side of the sternum but can affect both sides.
- Made worse by activities that stretch or put pressure on the inflamed cartilage.
 - Examples include taking a deep breath, sneezing, coughing, laughing, lying down, rolling over, bending, etc.
 - Some people report “difficulty breathing” because they can’t take a deep breath comfortably (not because they are having heart or lung problems).

❖ Chest wall pain can be confused with heart pain. Like heart pain, chest wall pain can be intense. Unlike heart pain,

- The discomfort from costochondritis can often be reproduced by pushing on the chest wall.
- Chest wall pain is usually not worsened by physical exertion (unless the rib cage is being stretched or compressed, as described above).
- Chest wall pain can last throughout the day (whereas heart pain usually improves after a few minutes or hours).

❖ Costochondritis can also be misdiagnosed as or accompanied by anxiety about having chest pain.

❖ When the pain of costochondritis is associated with swelling of the injured area, it is referred to as Tietze’s Syndrome. This typically affects the 2nd and 3rd ribs, and is more common in young adults. The treatment for this syndrome is similar to costochondritis.

HOW IS IT DIAGNOSED?

The diagnosis of costochondritis is usually based on the patient's symptoms and physical exam. A hallmark finding is the ability of the medical provider to reproduce the pain by pushing on the chest wall. Labs and chest x-rays are usually not necessary but can be used to rule out other causes of chest pain. Sometimes an electrocardiogram (a painless test measuring the electrical activity of the heart) is performed to rule out heart problems.

WHAT IS THE TREATMENT?

Costochondritis often resolves without treatment. However, symptoms can sometimes take weeks to months to go away. Since the cause of costochondritis is frequently unknown, treatment is aimed at pain control.

❖ Behavioral Modifications

- Avoid activities and movements that intensify the pain.
 - You may need to change your exercise routine or make adjustments to your work duties.
 - It is also best to avoid contact sports until symptoms have resolved.
- Stretches and gentle exercise, such as walking and swimming, can help with symptoms.
 - Stop the stretches or exercise if it is making the pain worse.
 - Please refer to the next page for stretching exercises recommended specifically for costochondritis.
- Ice packs, a heating pad on a low setting, or gentle massage applied to the affected area can decrease symptoms. If one modality doesn't seem to help, try another.
 - Cold therapy helps reduce swelling and is typically used during the first 48 hours of injury. Ice may be applied for up to 20 minutes and repeated every 2 to 2.5 hours.
 - Heat therapy increases blood flow and decreases muscle spasm. It may be applied for up to 20 minutes, several times a day. Heat application is usually not recommended during the first 48 hours of injury due to the risk of increasing inflammation.

❖ Over-The-Counter (OTC) Medications

- Pain-relieving pills are commonly used to treat mild to moderate chest wall pain.
 - Anti-inflammatory pain medications (also known as NSAIDs) are considered first-line. Examples include ibuprofen (Advil or Motrin) and naproxen (Aleve). These pills should be taken with food to avoid an upset stomach. Consult your medical provider before starting if you have a history of stomach ulcers or kidney disease.
 - Acetaminophen (Tylenol) is preferred for those who cannot take NSAIDs. Consult your medical provider first if you have a history of liver disease.
- 1% diclofenac (Voltaren) gel or patch is now available without a prescription. Diclofenac is an anti-inflammatory pain medicine (or NSAID) in the same class as ibuprofen and naproxen.
 - The gel or patch is typically used in patients who cannot take NSAID pills. It is often added on if patients are not responding to acetaminophen.
 - Topical diclofenac should be discontinued if there is no improvement after 2 weeks of use.
- Other topical pain medications, such as those containing capsaicin, salicylates, or lidocaine, can also help decrease symptoms. They are typically used in combination with a pain pill.

❖ Prescription Medications

- If you are not responding to OTC pain medications, your medical provider may recommend trying a prescription anti-inflammatory pill, such as diclofenac (Voltaren), or higher doses of ibuprofen or naproxen.
- In patients with persistent chest wall pain, other prescription medications may be recommended. Examples include tricyclic antidepressants, such as amitriptyline (Elavil), muscle relaxants, and anti-seizure medications, such as gabapentin (Neurontin).

❖ Procedures

A referral to a specialist for steroid injections, nerve blocks, or other interventions is recommended for severe cases unresponsive to initial treatment or for pain lasting more than 6 weeks.

RECOMMENDED WEBSITES: www.mayoclinic.org, www.webmd.com

Stretches for patients with a confirmed diagnosis of costochondritis

Stretch	Description
Doorway stretch	Stand facing an open doorway. Raise your arms to the sides and bend your elbows to a 90 degree angle. Rest your forearm against the wall and with your elbow at shoulder height, and lean forward through the open doorway to stretch your chest muscles. Hold the stretch for 30 to 60 seconds before relaxing. Repeat 10 times. Variation: Raise your hands higher on the doorframe while stretching.
Foam roller or rolled towel stretch	Lie down with a foam roller or rolled towel under your midback, knees bent comfortably, with arms out to the sides and elbows bent gently (to approximately 20 degrees). Hold this pose for 20 seconds then roll off of (or remove) the towel or roller. There should be no tension in the upper back during this rest period. Repeat 10 times. Variation: Move your arms slowly along the floor in an arc (as if you are making snow angels).
Stability ball stretch	Sitting on a stability ball, roll down until your upper back is on the ball and your legs form a bridge. Relax arms to the sides; they should drop below your body. Hold pose for 60 seconds then relax. Repeat 10 times.
Sphinx pose	Lie on your stomach while supporting yourself on your elbows. Then open your chest, stretching up and backwards, arching the back. Hold this pose for 10 seconds. Relax to a prone (face-down) position for 20 seconds. Repeat 10 times.
Lateral flexion	Sit with your right arm raised above your head; use your left arm for support. Gently lean to the left and hold for 20 seconds. Repeat the same stretch towards the opposite side. Repeat cycle 10 times. Variations: Perform the lateral flexion exercise while standing. In addition, after straightening, you can flex forward, bending at the waist.

Patients should perform all of the stretches for optimal results.

- Stretching routines should be done once daily for 6 weeks then 3 times weekly for 6 additional weeks.
- Apply heat to the costochondral area for at least 5 minutes immediately before and after stretching (using a hot water bottle, a heating pad on low heat, or a warmed, moist cloth) to increase blood flow and relax the muscles.
- After stretching, cold may also be applied to the affected area (using an ice pack covered in a towel); 10 minutes on, then 10 minutes off, for 3 repetitions if the patient finds this helpful.
- If any of these exercises increase pain, stop immediately and rest to avoid injury. Avoid any additional exercises that exacerbate the symptoms.