CONDITION

Complex regional pain syndrome

Learn about algodystrophy, now usually called complex regional pain syndrome, including symptoms, diagnosis, treatment, recovery, and when to seek urgent care.

WHAT IT IS
Long-lasting limb pain condition

BODY SYSTEM
Nervous system

MAIN SYMPTOMS
Persistent severe pain, painful light touch, swelling, skin temperature or color changes

WHAT CAUSES IT
Unknown, often after limb injury

HOW IT IS DIAGNOSED
Medical history and examination using Budapest criteria

MAIN TREATMENT
Physical and occupational rehabilitation

CAN IT BE CURED?
Sometimes - many improve, recovery time varies

IS IT AN EMERGENCY?
Sometimes - suddenly cold and powerless limb

LONG-TERM OUTLOOK
Many improve, but pain may continue

Overview

Algodystrophy is an older term usually used for complex regional pain syndrome type I , or CRPS type I . It has also been called reflex sympathetic dystrophy. CRPS is a long-lasting pain condition that most often affects an arm, hand, leg, or foot.

CRPS may begin after a fracture, sprain, operation, or another injury. The pain and other symptoms are more severe or last longer than would normally be expected from the original injury. In CRPS type I, there is no confirmed injury to a specific nerve. CRPS type II has similar features but follows a known nerve injury.

The condition can affect more than pain sensation. Changes may occur in skin temperature and color, swelling, sweating, movement, and the growth of hair or nails. Symptoms can change from day to day and may not follow a simple sequence.

The exact process is not fully understood. CRPS appears to involve abnormal communication among the nervous system, immune system, blood vessels, and brain. The pain is real and is not explained by a person's mood or behavior. However, ongoing pain can affect sleep, emotional health, work, and relationships.

Early assessment matters because keeping the affected limb moving, within safe limits, may help prevent stiffness and loss of function. Many people improve, particularly when treatment begins early, but recovery time varies.

Because "algodystrophy" is used differently in some medical systems, ask the clinician who used the term whether they mean CRPS type I.

Symptoms

CRPS usually affects one limb. Symptoms may begin near the site of an injury and involve a larger area over time. Their intensity can rise and fall.

Persistent pain is the main symptom. It may feel burning, stabbing, throbbing, or like electric shocks. The pain can be out of proportion to the original injury. Normal contact, such as clothing, bedding, or a light touch, may become painful. This is called allodynia . A mildly painful stimulus may also feel unusually intense, known as hyperalgesia .

Other possible symptoms include:

Some people develop movement problems because pain makes activity difficult. CRPS can also directly affect movement control. Avoiding all movement for a prolonged period may add to weakness and stiffness, although activity should be increased carefully rather than forced through severe pain.

Older descriptions divided CRPS into "warm" and "cold" stages. In practice, symptoms do not always occur in a fixed order. Temperature, color, and swelling may change over minutes, hours, or longer periods.

- Swelling in the affected area
- Skin that feels warmer or cooler than the opposite limb
- Red, pale, blue, blotchy, or shiny skin
- Increased or decreased sweating
- Stiffness and reduced range of motion
- Weakness, shaking, muscle spasms, or abnormal limb positioning
- Changes in hair or nail growth

- Difficulty using the hand, standing, or walking
- A sense that the affected limb feels unfamiliar, larger, or smaller than it is

Causes and risk factors

CRPS often starts after damage to a limb. Common triggers include a broken bone, joint injury, sprain, crush injury, operation, or a period of immobilization in a cast or splint. Even a relatively minor injury can sometimes be followed by CRPS.

The condition is not simply the result of tissue damage. Several body systems may remain unusually sensitive after the original injury begins to heal:

It is difficult to predict who will develop CRPS. Not everyone has a clear triggering injury, and most people with fractures or surgery do not develop the condition. There is no routine genetic test that can show whether someone is at risk.

CRPS is not caused by anxiety or depression. These conditions can occur alongside persistent pain and may increase the burden of symptoms, but they do not mean the pain is imagined. Addressing sleep, stress, fear of movement, or low mood can still be an important part of pain rehabilitation.

- Pain-processing nerves may send or amplify signals more easily.
- Local inflammation may continue longer than expected.
- Small blood vessels may not regulate blood flow normally.
- The brain and spinal cord may process touch, pain, and movement differently.
- Reduced movement may contribute to stiffness, weakness, and altered sensation.

Diagnosis

There is no single blood test or scan that confirms CRPS. Diagnosis is based mainly on the medical history and a physical examination. A clinician may compare the affected limb with the unaffected side and look for changes in sensation, temperature, color, sweating, swelling, movement, skin, hair, or nails.

Clinicians commonly use the Budapest criteria . These require ongoing pain that is disproportionate to the original event, along with a particular combination of reported symptoms and observable signs in four groups:

Under these criteria, symptoms must be reported in at least three of the four groups, and signs

must be present during the examination in at least two groups. Another diagnosis must not explain the findings better. Symptoms may vary, so one examination does not always show every change a person has noticed at home.

Tests may be used to look for other causes rather than to prove CRPS. Depending on the situation, these can include blood tests, X-rays, ultrasound, nerve tests, or magnetic resonance imaging. A bone scan may show changes in some people, but a normal result does not rule out CRPS.

Conditions that can resemble parts of CRPS include infection, a blood clot, poor arterial blood flow, arthritis, nerve compression, peripheral neuropathy, and problems with bone or soft tissue. Careful evaluation is important because these conditions may require different treatment.

- Sensory: increased pain from touch, pressure, pinprick, or movement
- Vasomotor: differences in skin temperature or color
- Sudomotor or swelling: altered sweating or visible swelling
- Motor or trophic: reduced movement, weakness, tremor, abnormal posture, or changes in skin, hair, or nails

Treatment and management

Treatment is usually coordinated by several professionals. Depending on the person's needs, the team may include a primary care clinician, pain specialist, physiotherapist, occupational therapist, rehabilitation doctor, psychologist, or surgeon.

The main goals are to improve limb use, reduce pain, support daily activities, and prevent avoidable stiffness or weakness. Treatment plans should reflect the person's symptoms, stage of recovery, other health conditions, and response to earlier care.

Rehabilitation

Physical and occupational rehabilitation is central to treatment. Therapy often begins with gentle, manageable activity and progresses over time. It should be challenging enough to support recovery without repeatedly causing major symptom flares.

Approaches may include:

Complete rest is generally not the goal, but forceful manipulation or sudden intense exercise may worsen symptoms. A therapist familiar with persistent pain can help find an appropriate pace.

Medicines

Medicines may be offered to reduce pain enough to support sleep, movement, and rehabilitation. No single medicine works for everyone, and evidence for many drug treatments in CRPS is limited.

A clinician may consider medicines used for nerve-related pain, such as certain antidepressant or antiseizure medicines. These are prescribed for their effects on pain pathways, not because the pain is psychological. Topical medicines may help when pain is limited to a smaller area.

Some specialists consider a short course of a corticosteroid like prednisone or hydrocortisone in selected people with early inflammatory features. Medicines that affect bone turnover, including bisphosphonates, may also be considered in particular circumstances. These treatments have potential risks and are not suitable for everyone.

Standard pain relievers may help pain from the original injury or inflammation, but they often have limited effect on the nerve-related features of CRPS. Long-term opioid treatment requires careful review because benefits may decrease while side effects and dependence risks continue.

Medication choices should be made with a clinician or pharmacist. Treatment may need adjustment if it causes troublesome side effects or does not improve meaningful activities.

Psychological and social support

Persistent pain can lead to poor sleep, fear of movement, frustration, anxiety, or low mood. Pain-focused psychological therapies can teach skills for managing flare-ups, reducing distress, improving sleep, and increasing activity safely. This support complements physical and medical care; it does not suggest that CRPS is imaginary.

Specialist procedures

If rehabilitation and medicines have not provided enough improvement, a pain specialist may discuss procedures. Options can include selected nerve or sympathetic blocks and implanted neuromodulation devices. Spinal cord stimulation and dorsal root ganglion stimulation deliver electrical signals near pain pathways.

These treatments are not routine first steps. They require specialist assessment, discussion of expected benefits and risks, and usually a trial or screening process.

- Gradual movement and strengthening
- Practice with walking, balance, hand use, or daily tasks
- Desensitization using controlled exposure to different textures or touch
- Swelling management and comfortable limb positioning

- Mirror therapy or graded motor imagery, which retrains how the brain processes movement
- Strategies for pacing activities and returning to work or hobbies

Complications

CRPS can make movement and daily activities increasingly difficult. Persistent swelling, pain, and reduced use may lead to muscle weakness, joint stiffness, and shortening of muscles or tendons. Severe stiffness can result in a contracture , meaning a joint becomes fixed in a limited position.

Changes in balance or limb control may increase the risk of falls. Skin sensitivity can interfere with wearing shoes, clothing, splints, or prosthetic devices. Sleep disruption and reduced independence can affect school, employment, relationships, and emotional well-being.

Symptoms sometimes spread beyond the area where they began, although this does not happen to everyone. CRPS may also improve and then flare again after stress, illness, overactivity, or another injury. A flare does not necessarily mean that permanent damage is occurring.

Early, coordinated care may reduce functional problems. Even when pain continues, rehabilitation can help many people improve movement, independence, and quality of life.

Follow up

Routine follow-up is used to review pain, sleep, swelling, movement, medication effects, and progress toward practical goals. Goals might include tolerating clothing, using the hand for a task, walking farther, returning to work, or sleeping more consistently.

Contact the treating clinician sooner if symptoms are rapidly worsening, therapy is causing repeated severe flares, a medicine causes concerning side effects, or new symptoms develop outside the usual pattern. Changes in mood, severe sleep loss, or difficulty coping also deserve prompt support.

CRPS itself is not usually an emergency. However, new limb symptoms should not automatically be assumed to be CRPS.

Seek urgent medical assessment for:

Call emergency services for chest pain, severe breathing difficulty, fainting, or a suddenly cold and powerless limb. These symptoms may indicate a blood clot, serious infection, or loss of

blood flow and require immediate assessment.

- New fever, spreading redness, warmth, pus, or an open wound
- Sudden major swelling, especially with calf pain
- A limb that suddenly becomes very pale, blue, cold, numb, or weak
- New chest pain, shortness of breath, fainting, or coughing up blood
- Severe pain after a new injury, especially with deformity or loss of function

Sources

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