

COMPLEX REGIONAL PAIN SYNDROME (CRPS)
(also referred to as Sympathetic Dystrophy or Causalgia)

I. BACKGROUND

Complex regional pain syndrome is a descriptive term encompassing a variety of painful conditions following injury, which appear regionally and have a distal predominance of abnormal physical examination findings. This painful condition typically follows a traumatic injury or noxious event to an extremity, with a disproportionate response respective to the original insult. Medical conditions including stroke and myocardial infarction may also be precipitating factors. The pain pattern is not limited to the distribution of a single peripheral nerve, and physical findings include edema, alterations in skin blood flow, abnormal sudomotor activity in the region of pain, allodynia, or hyperalgesia.

CRPS Type I (Reflex Sympathetic Dystrophy)

1. Type I CRPS is a syndrome that develops after an initiating noxious event.
2. Spontaneous pain or allodynia/hyperalgesia occurs, is not limited to the territory of a single peripheral nerve and is disproportionate to the inciting event.
3. There is or has been evidence of edema, skin blood flow abnormality, or abnormal sudomotor activity in the region of the pain since the inciting event.
4. The diagnosis is excluded by the existence of conditions that would otherwise account for the degree of pain and dysfunction.

CRPS Type II (Causalgia)

1. Type II CRPS is a syndrome that develops after a nerve injury. Spontaneous pain or allodynia/hyperalgesia occurs and is not necessarily limited to the territory of the injured nerve.
2. There is or has been evidence of edema, skin blood flow abnormality or abnormal sudomotor activity in the region of the pain since the inciting event.
3. The diagnosis is excluded by the existence of conditions that would otherwise account for the degree of pain and dysfunction.

II. DIAGNOSTIC CRITERIA

1. History of noxious event or cause of immobilization.
2. Continued pain, allodynia, or hyperalgesia out of proportion to the injury.
3. Physical evidence of edema, trophic skin changes, hair loss, alterations in skin blood flow or abnormal sudomotor activity in the region of pain.
4. The diagnosis is excluded by the existence of conditions that otherwise account for the degree of pain and dysfunction.

III. DIAGNOSTIC STUDIES

1. Surface temperature measurements indicating at least one degree Celsius asymmetry between the normal and injured sides. The existence of a skin temperature differential may vary, and repeated measurements are helpful. The injured side may be warmer or cooler.
2. A three-phase radionuclide bone scan may assist in diagnosis. A normal study does not exclude this diagnosis, however.
3. Radiographic studies of the injured extremity may show patchy demineralization in chronic or severe cases.

IV. TREATMENT

Treatment for complex regional pain syndrome type 1 (reflex sympathetic dystrophy) should be directed at providing pain control, in conjunction with an effort to promote participation in a directed physical and/or occupational therapy program to restore use and function of the injured extremity. Treatment options include:

1. Pharmacologic Agents
 - a. Nonsteroidal anti-inflammatory drugs
 - b. Antidepressants including tricyclics and duloxetine
 - c. Membrane stabilizers (anticonvulsants)
 - d. Oral opioids
 - e. Oral corticosteroids
 - f. Capsaicin
 - g. Bisphosphonates including alendronate and neridronate
2. Physical Modalities
 - a. Desensitization (contrast baths or fluidotherapy)
 - b. Range of motion exercises (passive, active assisted, active)
 - c. Edema control garments (stocking or glove)
 - d. Stress-loading via weight-bearing exercises
 - e. Functional training/work conditioning/work hardening
3. Injection Techniques

Somatic and sympathetic nerve blocks may be effective for patients displaying allodynia who are unable to tolerate manipulation of the injured extremity. Occasionally, continuous nerve blocks employing brachial plexus or epidural catheter is/may be necessary for patients with severe pain and stiffness from prolonged immobility.

General guidelines for the use of neural blockade are as follows:

- a. Evidence of a successful block, either an increase in skin temperature by 4 degrees Fahrenheit with sympathetic blocks, or evidence of motor block in the appropriate nerve distribution should be documented.
- b. Unless a continuous catheter is used, nerve blocks should be utilized at most two or three times per week in conjunction with therapy.
- c. Repeated neural blockade should only be considered if a clear benefit is evident following each block, as indicated by substantial improvement in pain persisting for prolonged time periods following the block or marked improvement in range of motion and swelling can be documented.
- d. Nerve blocks performed in a series should be conducted based on a positive benefit from the initial blocks and should not exceed three blocks in a series. The response to the block series should then be reassessed following a period of continued physical therapy, not to exceed 6 weeks of treatment between physician reassessments. Failure to continue to improve, or diminished function, should be considered an indication for additional nerve blocks, assuming a positive response was documented with the first series.
- e. If a substantial improvement cannot be demonstrated, excluding the transient pain relief that accompanies any somatic nerve block, further use of neural blockage is unwarranted.

4. Surgical Sympathectomy and Neuromodulation

Surgical sympathectomy is rarely considered effective in resolution of complex regional pain syndromes. These syndromes, including causalgia and reflex sympathetic dystrophy, are related to receptor supersensitivity and are not caused by over-activity of the sympathetic nervous system. Most patients undergoing a surgical sympathectomy obtain only transient improvement in pain levels and may suffer serious or disabling complications from the surgery. Neuromodulation techniques such as spinal column stimulator implantation use are governed by the Spinal Column Stimulators Protocol.

5. The assistance of a pain management psychologist or psychiatrist may be helpful in cases where symptoms persist for 2 months or more. Individuals with CRPS may develop secondary psychological disorders including depression, anxiety, or post-traumatic stress disorder (PTSD). Psychology and/or psychiatry intervention can provide motivational support, assess, and treat co-existing conditions such as depression, and may aid in the establishment of realistic treatment goals and objectives. This condition may be appropriate for treatment in a multidisciplinary program if pain persists for 2 months or more.

PROTOCOL HISTORY:

Passed: 9/1/1992 (As “Sympathetic Dystrophy”)
Amended: 11/19/2002 (As “Chronic Regional Pain Syndrome”)
Amended: 6/3/2008
Amended: 5/5/2009
Amended: 4/27/2010
Amended: 3/22/2022 (As “Complex Regional Pain Syndrome”)