

Complex Regional Pain Syndrome: Hope Now and for the Future

By Bradley S. Galer, MD

Complex regional pain syndrome (CRPS) is a perplexing condition that has been relatively ignored by the medical community precisely because it is so confusing. Pain in CRPS patients does not follow a pattern expected in painful neurologic conditions. The affected limb or body part often changes color or temperature quite dramatically, while patients sometimes display protective behavior that looks odd to an observer. As in conditions such as lower back pain, CRPS may result from a work injury and, thus, may carry suspicion of an ulterior financial motive; although this is rarely, if ever, the case. The net result has been a tendency among many in the medical community to keep CRPS at arm's length, ultimately making it more difficult for patients to receive appropriate therapy.

Fortunately, there is now a group of research scientists and physicians who are dedicated to advancing our understanding and treatment of this difficult condition. Although there is no cure at the present time for CRPS, in my experience, almost all patients can be helped to function better and improve their quality of life with the proper care. In this short article, I summarize advances in our understanding of CRPS, as well as describe promising new approaches to therapy.

What Is CRPS?

A great deal has been written about CRPS (or “reflex sympathetic dystrophy” and “causalgia”), documenting it as a real clinical disorder. Numerous attempts have been made to identify common causes and features to serve as a basis for effective treatment. Reports of unusual pain following nerve injury date back over 150 years; the term “causalgia” was first used in 1867 to describe a burning pain associated with changes in skin temperature and appearance. A similar condition caused by more general injury to the body (without evidence of nerve injury) was described about 10 years later, although the term “reflex sympathetic dystrophy” (RSD) was not coined until 1944 to describe the condition of a group of patients with chronic pain and skin changes. [Those interested in more details about the history of CRPS and other topics dis-

cussed here are encouraged to consult a review chapter on the subject.^{1]}

Eventually, many different disorders came to be lumped under the term RSD. By definition, all of them were thought to result from a defect in the sympathetic nervous system—now specifically known as sympathetic maintained pain or SMP—because they all respond to treatment with sympathetic nerve blocks. However, over the past decade, experts have begun to question this and other previous medical assumptions, and their skepticism has resulted in exposing most of these assumptions as myth or half-truths. CRPS is at last being viewed from a new clinical perspective.

A crucial part of this effort has been the attempt by the International Association for the Study of Pain (IASP) to accurately define this medical condition, now called CRPS and, especially, to differentiate it from other conditions involving nerve pain.² The new IASP diagnostic criteria recognize two syndromes: CRPS I and CRPS II. Both are conditions in which pain is most often severe and the area affected is characterized by skin sensitivity, abnormal color changes, temperature changes, and sweating. Not all patients have all these symptoms continuously, but they must always have more than just pain and skin sensitivity. CRPS II (previously called causalgia) differs from CRPS I (or RSD) in being the result of identifiable nerve injury; otherwise they are the same symptomatically. By accurately defining CRPS, there is a much better chance of finding effective treatments.

Common Treatment Myths and Half-truths (Table 1)

One of the myths regarding treatment of CRPS is that nerve blocks are the key to therapy, especially early in the course of the disease. Even today, physicians commonly confuse SMP with CRPS. Although nerve blocks may be curative for some patients with CRPS who have SMP, this is not true in all patients. Most of the pain in many CRPS patients is thought to be caused by mechanisms independent of the sympathetic nervous system (SIP, sympathetic independent pain); hence, nerve blocks are

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not typically effective. Physical and rehabilitation therapy is probably much more important in treating patients with CRPS than are therapies such as nerve blocks, which are used to treat other kinds of nerve pain injury.

Another mistaken notion is that CRPS patients progress through a series of increasingly debilitating stages, or that CRPS will spread to other parts of the body. Although CRPS may spread, this does not occur in every patient. Instead, what often happens is that disuse of a limb, for example, leads to secondary problems like muscle spasm, which can affect other parts of the body. Recent studies have shown that there is no one set of stages that every patient goes through.³ It is more likely that there are subgroups of patients with different combinations of symptoms who go on to have diverse CRPS courses. Regardless of the subgroup or stage, the important point to keep in mind is that patients need to get proper, consistent treatment as soon as possible.

Related to this is the erroneous belief that therapy will be unsuccessful unless started early. Although it is important to receive treatment as early as possible, patients should not give up hope if their CRPS remained undiagnosed until 5 or even 10 years into the course of the disorder. Based on my experience, patients with CRPS can respond to therapy even when they have had the condition for many years.

Perhaps the most pervasive and disturbing myth is that CRPS is a psychological disorder and is “all in the patient’s head.” To some extent, this notion probably reflects the unusual nature of CRPS: It does not follow the manifestations of many other nerve disorders, and physical tests are typically normal; this situation is similar to that in patients with migraine or chronic shingles pain (postherpetic neuralgia), for example. Patients with CRPS often develop secondary psychological condi-

tions—depression or anxiety—as a result of the effect severe pain has on their lives, but CRPS is not a psychiatric or psychogenic disorder. Rather, it is a chronic pain condition, like the pain from migraine or shingles, which is believed to result from some dysfunction in either the central or peripheral nervous system, or both.

What Causes CRPS?

CRPS is an underlying pain condition that most physicians believe reflects an abnormality in the nervous system, although standard tests are frequently normal. Recent models for nerve pain show that animals suffering a nerve injury display characteristics similar to humans with CRPS, including sensitivity to touch and changes in temperature and color. Although this information may seem arcane, it helps us to understand the physiologic basis for CRPS in much the same way that progress was made in understanding and successfully treating migraine.

Following injury, the body undergoes a series of physiologic responses designed to heal the damage, including a so-called inflammatory response that results in changes in the area, such as redness, warmth, and swelling. This response is accompanied by changes in the nervous system, which registers pain sensations in the surrounding area and results in skin sensitivity. In effect, many of the signs and symptoms that patients with CRPS experience are part of the normal healing process; these responses usually cease after a short period of time. CRPS may, thus, represent a disruption of the healing process, although it is not known how pain and other important symptoms are maintained over months and even years.

Why do some people get CRPS, whereas others do not, and why does a particular injury result in CRPS? Similarly, it is unknown why some patients with diabetes

Table 1. Common Treatment Myths and Half-Truths

Myth: Nerve blocks are the key to therapy.

Fact: Nerve blocks are effective in only a small percentage of CRPS patients.

Myth: CRPS progresses through a series of debilitating stages or will spread.

Fact: There are different subgroups of patients with various symptoms; CRPS does not spread in every patient.

Myth: Therapy will be unsuccessful unless started early.

Fact: CRPS patients may respond to treatment regardless of when it is started.

Myth: It’s all in your head.

Fact: CRPS is a chronic pain condition resulting from a dysfunction in the nervous system.

develop a chronic nerve problem with associated pain, whereas others do not. One recent theory suggested for CRPS is that the injury occurs during a time of stress, which may alter the body's response to injury, especially by the central nervous system. This may not be true in every patient, however; in all likelihood, CRPS does not have a single cause, but rather multiple causes that result in similar symptoms.

Approach to Treatment

Unfortunately, there is no “magic bullet” for patients with CRPS. When a patient presents for treatment, most authorities generally recommend a sympathetic nerve block because there is a small minority of patients who experience significant relief afterward. However, patients should be warned not to be disappointed if a trial of 1 or 2 nerve blocks indicates that this therapy does not work for them. Each patient is different in terms of response to nerve blocks and medications. To date, no block or other treatment has been shown to “cure” all patients with CRPS; the good news is that there is a long list of treatments that have been shown to ameliorate the pain and improve quality of life for many patients.

More important perhaps than finding the right medication is that patients should become active participants in their treatment. It is not an easy road, but the first key element is to find a physician—often a pain expert—who is familiar with the range of treatments reported to help patients with CRPS, not just a nerve block specialist. It is equally important that patients find a physical or occupational therapist who has experience with this condition. It is also recommended that CRPS patients have at least one interview with a psychologist or psychiatrist to assess the impact that a chronic pain condition such as CRPS has had not only on their own lives, but also on those of their family and friends. All treating physicians and therapists should have contact with one another to coordinate their efforts.

Physiotherapy

A central goal of therapy is to get the painful limb or body part moving and to restore function as close to normal as possible. This may include everything from restoring range of motion to an injured limb or tolerance for daily activities, such as walking and sitting, to reducing sensitivity to clothing and other objects in the environment with which the patient comes into contact.

Unquestionably, there will be times when patients will not want to move and other times when they will want to move too much. The key is to stick to a gradually increasing exercise program with the help of a therapist who the patient trusts and feels comfortable working with on a continual basis.

Psychotherapy

Counseling is important not because psychological factors cause CRPS, but because this condition often has profound psychological effects on patients and their families. As in other chronic pain conditions, CRPS patients may suffer from major depression, anxiety, or post-traumatic stress disorder, all of which tend to heighten the sense of pain and make rehabilitation efforts more difficult. Patients who are not treated for psychological conditions simultaneously with their pain will not obtain optimal benefit from the overall treatment plan.

Medical Therapy

As a treating physician, my own expertise is in the use of medications. Because there is no known cure for CRPS, treatment is aimed at relieving painful symptoms so that patients can participate in rehabilitation therapy and, over time, return as much as possible to normal activities. Drugs should be tried one at a time, slowly but aggressively, making changes over the course of a few days or a week, if necessary, until the right agent or combination of agents is found that provides some degree of relief. No one drug is effective in every patient, and each patient differs in terms of response. One of the key principles in treating CRPS, as in other pain conditions, is finding the right balance between pain relief and tolerable side effects. Most CRPS patients eventually find that a group of medications taken in combination provides the best degree of pain relief.

With these caveats in mind, I generally recommend that patients receive a sympathetic nerve block early on—administered by a trained anesthesiologist—because a small but definite group of patients thereby experience significant relief. If one or, perhaps, several blocks are not successful, then this approach should be abandoned in favor of other alternatives, a number of which are summarized in Table 2.

Table 2. Medications

Drug Class	Examples
Topical Drugs Targeted peripheral analgesics	Lidocaine patch 5% (Lidoderm); capsaicin cream
Antiseizure agents	Gabapentin (Neurontin), topiramate (Topamax), carbamazepine (Tegretol)
Opioids	Oxycodone (Oxycontin), oxycodone/acetaminophen (Percocet), morphine (MS Contin), transdermal fentanyl patch (Duragesic)
Antiarrhythmics	Mexiletine (Mexitil)

In trying to find the right medication or combination of medications, I also advocate starting with those that are the safest and best tolerated in terms of adverse effects, partly because they will be used over a long period. Given this approach, there are 3 types of agents I would concentrate on.

1. Topical drugs (targeted peripheral analgesics) do not deliver any meaningful amounts of medication to the bloodstream, but act locally on the painful nerves, skin, and muscles. The lidocaine patch 5% (Lidoderm®) has recently shown some promise in treating painful nerve conditions, including CRPS.⁴ Although some physicians advocate use of capsaicin, in my experience this treatment may cause a worsening of pain.

2. Antiseizure medications, to which patients generally report minimal side effects, may also provide pain relief. Examples of drugs in this class include gabapentin (Neurontin®) and topiramate (Topamax®).

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3. Opioid therapy, from which many patients obtain good pain relief with tolerable side effects, is another option. Drugs in this class include oxycodone (Oxycontin®), the combination of oxycodone and acetaminophen (Percocet®), morphine (MS Contin®), and the transdermal fentanyl patch (Duragesic®).

Quite often, patients have the best response to a combination of medications that work to relieve pain in different ways.

Conclusions

The advice I give to my patients is simple and direct: stick with all of the necessary treatments you find helpful. You are likely to have pain flares during treatment, and it may take months or a year or even two to achieve optimal results. Do not become disappointed and give up. It is a hard road, but most patients get significantly better with this kind of multidisciplinary approach.

In order for treatment to be successful, patients need to find the support of physicians and therapists they trust and with whom they can work. As I mentioned at the outset, there now exists a group of researchers and clinicians who are dedicated to improving care for patients with CRPS. At the same time, these efforts are being supported by the pharmaceutical industry, which is also dedicating resources to find effective treatments for CRPS and other types of chronic nerve pain.

References

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