

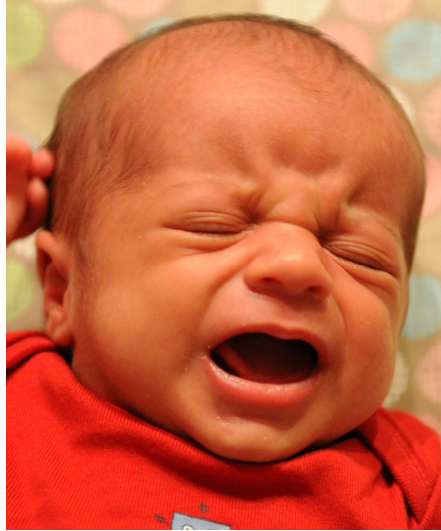
# Complex Regional Pain Syndrome “Pain that won’t go away”

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## What is Pain?

An unpleasant sensory  
experience associated with real  
or perceived tissue injury





Acute Pain  
vs  
Chronic Pain

## Historical Perspective

*“Perhaps few persons who are not physicians  
can realize the influence of which long-  
continued and unendurable pain can have  
upon both body and mind.”*

## Various Terminologies

- » Acute atrophy of the bone
- » Algodystrophy
- » Algoneurodystrophy
- » Chronic traumatic edema
- » Postinfarctional sclerodactyly
- » Post-traumatic algodystrophy
- » Shoulder hand syndrome
- » Sudeck's dystrophy
- » Sympathalgia
- » Traumatic angiospasm
- » Traumatic vasospasm
- » Post-traumatic dystrophy
- » Post-traumatic osteoporosis
- » Post-traumatic spreading neuralgia
- » Post-traumatic sympathetic dystrophy
- » Pseudodystrophy
- » Reflex neurovascular dystrophy

## Complex Regional Pain Syndrome

- Complex: Varied and dynamic clinical presentation
- Regional: Non-dermatomal distribution of symptoms
- Pain: Out of proportion to the inciting events
- Syndrome: Constellation of signs and symptoms

## Pathophysiology

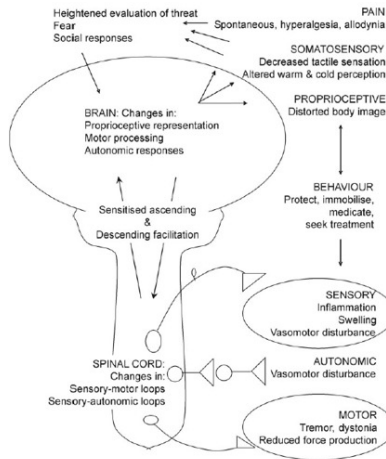


Fig. 2. Schematic overview of pathophysiology of complex regional pain syndrome. Adapted from Janig and Baron.<sup>25</sup>

## Budapest Criteria

- 1. Continuing pain, disproportionate to any inciting event
- 2. Must report at least one symptom in 3 of the 4 following categories:
  - Sensory: Reports of hyperesthesia and/or allodynia
  - Vasomotor: Reports of temperature asymmetry and/or skin color changes and/or skin color asymmetry
  - Sudomotor/Edema: Reports of edema and/or sweating changes and/or sweating asymmetry
  - Motor/Trophic: Reports of decreased range of motion and/or motor dysfunction (weakness, tremor, dystonia) and/or trophic changes (hair, nail, skin)
- 3. Must display at least one sign at time of evaluation in two or more of the following categories:
  - Sensory: Evidence of hyperalgesia (to pinprick) and/or allodynia (to light touch and/or temperature sensation and/or deep somatic pressure and/or joint movement)
  - Vasomotor: Evidence of temperature asymmetry (>1 °C) and/or skin color changes and/or asymmetry
  - Sudomotor/Edema: Evidence of edema and/or sweating changes and/or sweating asymmetry
  - Motor/Trophic: Evidence of decreased range of motion and/or motor dysfunction (weakness, tremor, dystonia) and/or trophic changes (hair, nail, skin)
- 4. There is no other diagnosis that better explains the signs and symptoms

## Signs and Symptoms

- Sensory signs
- Vasomotor signs
- Sudomotor signs
- Motor/Trophic signs



## Diagnostic Studies

- Three-phase bone scintigraphy
- Plain xrays
- MRI
- Quantitative sensory testing
- Autonomic function testing
- Sympathetic blockade

## Patient Case #1

- Patient is a 14yo male who hurt his foot playing LaCrosse. Initially felt sore, put ice on it but developed into extreme sensitivity, burning pain. Refused to bear weight, could not wear socks or shoes, could not sleep, foot began to sweat, turned purple and blue, swollen. Admitted to the hospitalist service due to pain. Neurology, Orthopaedics, and Pain service consults obtained.

- Management course:
  - 1. Neurontin, Elavil, **PT** consult, TENS unit, desensitization
  - 2. Epidural placement- LA and clonidine
  - 3. CBT, biofeedback
  - 4. Outpatient PT, medications, CBT
  - 5. Medication change- cymbalta, melatonin
  - 6. Psychology referral
  - 7. Inpatient admission

## Patient Case #2

- Patient is an 18yo female training for a 5K who began to have some discomfort in the back of the left knee but continued to run. A month later states that she stepped funny or twisted the knee. Started having a lot more pain in the left knee with swelling. Began to have pain and swelling in ankle as well. Foot pain with extreme hypersensitivity, swelling. She was unable to put weight on her leg. MRI knee and ankle/foot normal. Recommended rest and using crutches. From knee down to toes began to have mottling and temperature changes (cold). Pain felt like burning, tingling, fiery, unable to sleep with a sheet or anything touching it. Found a “CRPS expert” online and went out of state for 2 weeks.

- **Diagnostic Studies:**

Labs: CBC, ESR, CMP, LFTs, Uric Acid, TFTs, CRP, Progesterone, Estrogen, ASO, ANA, DHEA Sulfate, Testosterone, Vitamin D (all normal)

Nerve Conduction Studies 12/6/10- Right L5 left S1 nerve root irritation and a lower extremity sensory peripheral neuropathy; left peroneal neuropathy to the EDB.

Xray Lumbar Spine 12/7/10- normal

Lower Body Sympathetic Galvanic Skin Response 12/7/10- sympathetic galvanic skin response asymmetry pattern in all views

Venous Duplex 12/8/10- normal

Bone Density 12/9/10- normal

Diagnostic Musculoskeletal Ultrasonography 12/9/10- tendinosis in the patellar tendon and thinning of the lateral cruciate ligament

Diagnostic Musculoskeletal Ultrasonography- irregularity in the medial deltoid, achilles tendinosis

Nerve Conduction Studies 1/19/11

C spine xray 1/19/11

Diagnostic Musculoskeletal Ultrasonography 1/20/11- hypoechogenicity at C3-5, T5-6

- **Procedures:**

12/7/10- L5-S1 Lumbar epidural steroid injection without fluoroscopy

12/8/10- US Guided Lumbar Transforaminal and Paravertebral

injection bilateral L5-S1 levels

12/9/10- Peroneal Nerve Block

12/10/10- Achilles tendon injection

12/13/10- Platelet Rich Plasma grafting with ultrasound guidance; Injection of sodium morrhuate

12/14/10- Medial deltoid ligament injection (sodium morrhuate)

12/15/10- Ultrasound Guided Sciatic Nerve Block

12/16/10- Achilles Tendon Injection

12/17/10- Medial Deltoid Ligament Injection

1/12/11- Medial Deltoid Ligament Injection

1/13/11- Ultrasound Guided Tibial Nerve Block

1/14/11- Achilles Tendon Injection

1/17-1/21- Electric sympathetic block at left L5 spinal level

**NO Physical Therapy**



## Treatment Options

- Medications
- Physical Therapy
- Cognitive Behavioral Therapy/Psychotherapy
- Interventional Pain Procedures
- Complementary Medicine

## Why should we treat pain?

“The pointless suffering of individuals for whom there are therapeutic modalities available ... is intolerable, and one of the great human tragedies of our time.”

Howard Fields, MD, PhD  
Professor, Neurology and Physiology, UCSF  
Director, Wheeler Center for Neurobiology of Addiction

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