Complex Regional Pain Syndrome

**Synonyms include:** algodystrophy, causalgia, reflex sympathetic dystrophy, Sudeck’s atrophy, allodynia.

- **Type 1** – disproportionate pain following an inciting painful circumstance, vasomotor instability (oedema, local redness or cyanosis), trophic skin changes (smooth-shiny skin, hyperhydrosis, scanty hair, brittle nails), and underlying osteoporosis.

- **Type 2** – same clinical presentation as Type 1, in the presence of a known nerve injury.

- The incidence can be as high as 30% after an acute fracture of an extremity (e.g. distal radius fracture), though it is often not recognised in its milder forms.

- **Stages:**
  - 1 = constant pain, hypersensitivity to touch (alldynia), and trophic skin changes
  - 2 = stiffness and pain
  - 3 = diminished pain but overall disuse of extremity

- **Treatment strategies:**
  - Recognise early within 6-8 weeks for better outcome
  - Massage, oedema control and gentle passive motion to prevent contracture
  - TENS machines or acupuncture
  - Exercise within limits of pain, otherwise a flare-up may result
  - NSAIDs of limited use
  - Propranolol (β-blocker), nifedipine (Ca²⁺ channel blocker)
  - Guanethidine blocks and depletes stores of noradrenaline in presynaptic vesicles of sympathetic nerve endings. Can be used in the form of a Bier’s block.
  - Gabapentin mimics the structure of GABA and initially synthesised to treat epilepsy, but blocks a different set of voltage-gated Ca²⁺ channel in the CNS to modulate pain.
  - In purely sympathetic mediated CRPS, medical or surgical ablation of stellate ganglion may be diagnostic and curative.
  - Chronic pain clinics that include a pain specialist, psychotherapist, rehabilitation specialist or occupational therapist ± a social worker.

- **Evidence base** (Perez R & Zollinger P, BioMed Central Neurology, 2010)
  - Physiotherapy and occupational therapy should form a part of treatment strategies, and may help with coping abilities.
  - Sub-anaesthetic doses of IV Ketamine infusions at 10 to 50 mg/hour reduced symptoms in CRPS 1 patients for an average of 9.4 months
  - 600mg to 1800mg Gabapentin in daily divided doses for 8 weeks may reduce pain in CRPS 1 patients, but may not alleviate sensory symptoms such as alldynia or hyperaesthesia.
- Free radical scavengers beneficial in CRPS 1: dimethyl sulphoxide (DMSO) 50% cream or 600mg N-acetylcyesteine orally TDS.

- Corticosteroids or bisphosphonates beneficial – but no consensus on dosage or duration

- 20mg nifedipine daily beneficial in the acute phase – descriptive studies only.

- 10-20 mg of ketanserine administered by intravenous injection reduces pain in CRPS-I

- Surgical sympathetic ablation offer pain reduction, with maximal effect if performed within 3 months of acute injury.

- Spinal cord stimulation with physiotherapy offers long term reduction in pain, but no improvement in function. Requires use of trial stimulation to carefully select patients for implantable devices, but also has a complication rate (requiring further surgery) in 25-50%.

- 500mg Vitamin C for 50 days from date of acute wrist fracture reduced risk of CRPS 1 from 10% to 2% (equivalent to an 80% relative risk reduction!)

- Secondary prevention in patients with a history of CRPS available through use of 100 IU salmon Calcitonin subcutaneously for 4 weeks peri-operatively, or pre-operative stellate ganglion blockade. Regional plexus blocks and epidurals also reduce relapses, and 2nd surgery should be planned only when symptoms of initial CRPS are at minimal levels.

- Incomplete or no evidence for use of paracetamol, intravenous NSAIDs, oral/IV morphine, local anaesthesia epidural nor local anaesthesia sympathetic ganglia blockade.

- No good trials showing data for pregabalin or tri-cyclic anti-depressants.

- Capsaicin compared in a single study alone, which reported 90% success but only at doses so strong that topical application had to be preceded by epidural block

- Descriptive studies only describing favourable use of baclofen for motor symptoms such as tremor and dystonias. But overall insufficient evidence for use of oral/intrathecal baclofen or botulinum toxin

- Conflicting evidence regarding calcitonin

- Guanethidine sympathetic blockage by intravenous instillation of no proven benefit. Equally percutaneous sympathetic blockade not useful according to single meta-analysis

- Insufficient evidence regarding amputation providing long-term control.

- Insufficient evidence regarding use of TENS machines