CQ HAND + UPPER LIMB
SPECIALIST ORTHOPAEDIC SURGEON

EVIDENCE SUMMARY

Complex Regional Pain Syndrome (CRPS)

Overview

- CRPS is a multifactorial condition that requires further study to better understand its pathogenesis, epidemiology, genetic involvement, psychological implications, and treatment options [3].
- The diagnosis of CRPS is a clinical diagnosis based on history and physical examination [9].
- Early recognition and prompt treatment of CRPS are important to minimize permanent loss of function [9].
- Patients with CRPS may still experience permanent impairment and disability despite early recognition and prompt treatment [9].
- The reported incidence of CRPS is influenced by the choice of diagnostic criteria, the study location, and how the fracture is managed [15].
- A more active treatment approach seems to lower the incidence of CRPS-1 [2].
- The incidence of CRPS following isolated cubital tunnel surgery is exceedingly rare, with an overall 1-year incidence rate of approximately 0.33% [10].
- Quantitative sensory testing outcomes indicate altered pain mechanisms in CRPS compared to controls, with a pooled standardized mean difference of -0.41 [5].
- The Hamilton Inventory can be relied upon to assess CRPS symptoms, functional limitations, and psychosocial impacts [4].
- Strong consideration should be given for the use of ketamine in patients presenting with chronic or refractory CRPS [1].
- Prednisolone has potential as a treatment option for CRPS, particularly in resource-limited settings where more specialized interventions may be unavailable [6].
- High-intensity laser therapy (HILT) offers conclusive evidence of pain reduction in CRPS-I, even after the third treatment session [7].
- The methodological quality of non-pharmacological treatment approaches for upper limb CRPS is overall poor [8].

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Background & Causes

- CRPS is a multifactorial condition requiring further study to understand its pathogenesis, epidemiology, genetic involvement, psychological implications, and treatment options [3].
- Altered pain mechanisms exist in CRPS compared to controls, with a pooled standardized mean difference of -0.41 in quantitative sensory testing outcomes [5].
- The diagnosis of CRPS is clinical, based on history and physical examination [9].
- Early recognition and prompt treatment are important to minimize permanent loss of function, although patients may still experience permanent impairment and disability [9].
- CRPS following isolated cubital tunnel surgery is exceedingly rare, with an overall 1-year incidence rate of approximately 0.33% [10].
- Female sex is a significant predictor of developing CRPS following treatment of Dupuytren contracture [11].
- Release of more than one digit is a significant predictor of developing CRPS following treatment of Dupuytren contracture [11].
- A large percentage of patients diagnosed with and treated for CRPS type 1 can have full resolution of their symptoms with carpal tunnel release [12].
- Elderly patients have a higher risk of developing CRPS after distal radius fracture surgery [13].
- Females have a higher risk of developing CRPS after distal radius fracture surgery [13].
- Manual laborers have a higher risk of developing CRPS after distal radius fracture surgery [13].
- CRPS-related hand lesions developed in 19.4% of patients following arthroscopic rotator cuff repair [14].
- Preexisting neuropathic disorders are the strongest predictors of CRPS after distal radius fracture [17].
- Traumatic nerve injuries are the strongest predictors of CRPS after distal radius fracture [17].
- Compressive neuropathies are the strongest predictors of CRPS after distal radius fracture [17].
- Cervical radiculopathy is the strongest predictor of CRPS after distal radius fracture [17].
- Patients with scaphoid waist fracture may be at higher risk of CRPS type I [19].
- Women with diabetes mellitus who report severe pain before treatment are at higher risk of CRPS type I following scaphoid waist fracture [19].

Symptoms & Presentation

- CRPS is a multifactorial condition [3].
- Quantitative sensory testing indicates altered pain mechanisms in CRPS compared to controls, with a pooled standardized mean difference of -0.41 [5].
- Pain is a highly debilitating symptom in CRPS-I [7].
- The diagnosis of CRPS is based on history and physical examination [9].

- CRPS should be considered a diagnosis of exclusion [18].
- Glomus tumors should be included in the differential diagnosis for patients with unusual chronic pain or neuropathy [18].

Management

- Quantitative sensory testing outcomes indicate altered pain mechanisms in complex regional pain syndrome compared to controls, with a pooled standardized mean difference of -0.41 [5].
- Early recognition and prompt treatment of CRPS are important to minimize permanent loss of function, though patients may still experience permanent impairment and disability [9].
- The incidence of CRPS following isolated cubital tunnel surgery (CuTS) is approximately 0.33% at 1 year [10].
- Elderly patients have higher risks of developing CRPS after distal radius fracture surgery [13].
- Female patients have higher risks of developing CRPS after distal radius fracture surgery [13].
- Manual laborers have higher risks of developing CRPS after distal radius fracture surgery [13].
- A patient with bilateral Dupuytren's contractures who developed CRPS-1 after fasciectomy had a positive outcome with no relapse on subsequent collagenase clostridium histolyticum (CCH) injection and manipulation of the other hand [16].

Key Considerations

- In patients with chronic or refractory CRPS, strong consideration should be given for the use of ketamine [1].
- A more active treatment approach appears to lower the incidence of CRPS-1 [2].
- CRPS is a multifactorial condition requiring further study to better understand its pathogenesis, epidemiology, genetic involvement, psychological implications, and treatment options [3].
- Prednisolone is a potential treatment option for CRPS, particularly in resource-limited settings where specialized interventions may be unavailable [6].
- High-intensity laser therapy (HILT) provides conclusive evidence of pain reduction in CRPS-I, even after the third treatment session [7].
- CRPS diagnosis is clinical, based on history and physical examination, with early recognition and prompt treatment important to minimize permanent loss of function [9].
- Patients with CRPS may still experience permanent impairment and disability despite early intervention [9].
- Female sex and the release of more than one digit are significant predictors of developing CRPS following Dupuytren contracture treatment [11].

- A large percentage of patients diagnosed with and treated for CRPS type 1 can achieve full resolution of symptoms with carpal tunnel release [12].
- CRPS-related hand lesions developed in 19.4% of patients following arthroscopic rotator cuff repair (ARCR) [14].
- The reported incidence of CRPS is influenced by the choice of diagnostic criteria, study location, and fracture management [15].
- A patient with bilateral Dupuytren's contractures developed CRPS-1 after fasciectomy but had a positive outcome with collagenase clostridium histolyticum (CCH) injection and manipulation of the other hand [16].

Key Evidence

- [L1] In patients presenting with chronic or refractory CRPS, strong consideration should be given for the use of ketamine. [1] (10.1177/15589447221131847)
- [L3] A more active treatment approach seems to lower the incidence of CRPS-1. [2] (10.1177/1558944719895782)
- [L4] CRPS is a multifactorial condition that still requires further studying to better understand its pathogenesis, epidemiology, genetic involvement, psychological implications, and treatment options. [3] (10.1007/s40122-021-00279-4)
- [L4] It can be relied upon to assess CRPS symptoms, functional limitations, and psychosocial impacts. [4] (10.1016/j.jht.2025.02.004)
- [L1] The systematic review and meta-analysis of quantitative sensory testing outcomes indicates altered pain mechanisms in complex regional pain syndrome compared to controls, with a pooled standardized mean difference of -0.41. [5] (10.1186/s13018-022-03461-2)
- [L4] The report emphasizes the importance of recognizing CRPS and highlights the potential of prednisolone as a treatment option, particularly in resource-limited settings where more specialized interventions may be unavailable. [6] (10.1186/s12891-024-07333-0)
- [L1] The study results offer conclusive evidence of pain reduction, a highly debilitating symptom in CRPS-I, even after the third HILT treatment session. [7] (10.1016/j.jht.2025.02.009)
- [L1] Methodological quality of non-pharmacological treatment approaches for upper limb CRPS is overall poor. [8] (10.1177/17589983221138610)
- [L2] CRPS following isolated CuTS is exceedingly rare, with an overall 1-year incidence rate of approximately 0.33%. [10] (10.1016/j.jhsg.2026.101028)
- [L3] Female sex and release of more than one digit are significant predictors of developing CRPS. [11] (10.1177/1558944720963915)
- [L3] This study demonstrates that a large percentage of patients diagnosed with and treated for CRPS type 1 can have full resolution of their symptoms with carpal tunnel release. [12] (10.1016/j.jhsa.2024.09.024)

- [L3] The occurrence of CRPS is the result of many factors, with elderly patients, females, and manual laborers having higher risks. [13] (10.1186/s12891-024-07948-3)
- [L3] CRPS-related hand lesions developed in 19.4% of patients following ARCR. [14] (10.5397/cise.2021.00080)
- [L1] The reported incidence of CRPS is influenced by choice of diagnostic criteria, along with the study location and/or how the fracture is managed. [15] (10.1177/1758998320910179)
- [L4] The positive outcome for this woman with Dupuytren's and CRPS-I after CCH injection is encouraging. [16] (10.1016/j.jht.2024.09.002)
- [L3] Preexisting neuropathic disorders, particularly traumatic nerve injuries, compressive neuropathies, and cervical radiculopathy, are the strongest predictors of CRPS after distal radius fracture. [17] (10.1016/j.jhsa.2026.01.004)
- [Case_report] Glomus tumors should be included in the differential diagnosis for patients with unusual chronic pain or neuropathy, and the diagnosis of CRPS should only be a diagnosis of exclusion. [18] (10.1177/1558944719895618)
- [L2] Patients suffering from scaphoid waist fracture may be at a higher risk of CRPS I, especially in women with diabetes mellitus who report severe pain before treatment. [19] (10.1186/s12891-021-04977-0)

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