

Sudeck's Osteodystrophy - Case Report

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Abstract: Sudeck's osteodystrophy also known as complex regional pain syndrome is a chronic systemic disease characterized by severe pain, swelling and changes in the skin. It often initially affects an arm or a leg and often spreads throughout the body. It is a multifunctional disorder with clinical features of neurogenic inflammation, nociceptive sensations or allodynia, vasomotor dysfunction, and maladaptive neuroplasticity generated by an aberrant response to tissue injury¹. Treatment is complicated involving drugs, physical therapy, psychological treatment and neuro modulation and usually unsatisfactory especially if began late [2]. We hereby report the successful management of an adult female patient who presented with features of sudeck's osteodystrophy with combination of various treatment modalities.

Keywords: Sudeck's osteodystrophy, Stellate ganglion block, treatment modalities

1. Introduction

CRPS –formerly reflex sympathetic dystrophy (RSD) or causalgia is a chronic systemic disease. It is a multifactorial disorder associated with dysregulation of the CNS and ANS resulting in multiple functional loss, impairment and disability. The international issue for study of pain has proposed dividing CRPS into two types based on presence of nerve lesion following the injury.

Type I, formerly RSD/Sudeck's dystrophy does not have demonstrable nerve lesion, majority of the patient are diagnosed with this type.

Type II, formerly known as causalgia has evidence of obvious nerve damage. It tends to be more painful and difficult to treat.

Since the causes are multifactorial, management is complicated involving drugs, physical therapy, psychological treatments and neuromodulation. We report the successful pain management of an adult patient diagnosed with symptoms of sudeck's osteodystrophy.

2. Case Report

A 38 year old female patient was referred to us from orthopedic department with the complaints of pain and swelling of right wrist and hand since one week, with a probable diagnosis of sudeck's osteodystrophy. Detailed history revealed that the patient had a history of fall from height; forty days back at her residence and had injury to the right forearm. She was diagnosed with fracture distal radius and was treated conservatively with cast application at a peripheral hospital. Later after the removal of cast, she presented with above complaints. There was no past history of any medical illness.

On local examination, the right hand and forearm was edematous, skin over the site was dry and erythematous, and temperature was low compared with the other hand. Extreme tenderness was present and she was unable to move the fingers. Possible diagnosis of sudeck's dystrophy right upper limb was made and she was planned for elective continuous stellate ganglion block right side with other medical line of

treatment for pain control. Meanwhile she was started on analgesics, antidepressants (Tab.Tryptomer 10 mg) and T. Vitamin C OD orally. Routine blood investigation carried out was within normal limits. Elective stellate ganglion of block right side was carried out under C arm guidance (figure 1) and local anesthetics drug combination of Inj. Xylocard 2% 2cc, Inj Bupivacaine 0.25% 4cc preservative free and Inj. Fentanyl 25mcg diluted to 10 cc with normal saline was given. A 20G cannula was kept at the stellate ganglion site for continuous supplementation of local anesthetic drugs.



Figure 1: Stellate ganglion block under C arm guidance

Post procedure patient became symptomatically better as evidenced by decreased edema and venodilatation, increased warmth of the skin, decreased pain and ability to move the fingers. She was hemodynamically stable throughout the procedure with mild ptosis on right side which recovered spontaneously. She was supplemented with the drug combination of Inj Xylocard 2% 2cc, Inj.Bupivacaine 0.25% 2 cc and Inj. Fentanyl 25 mcg diluted to 10cc, every eight hours for first three days through the cannula under strict monitoring(Figure 2). She was also supplemented with intravenous inj Ketamine infusion of 50mg over four hours once a day.



Figure 2: 20 G cannula for continuous stellate ganglion block

At the end of five days patient was symptomatically better with improved functional ability. She was continued with Tab. Tryptomer 10 mg OD and Tab. Vitamin C orally for duration of 10 days. She was shifted to the ward after 5 days with the advice of physiotherapy and medications. She was also advised oral ketamine (250mg in 750 ml of sweetened drink) 30ml per day for 10 days. Patient was able to carry out simple activities like lifting cup or bottle with minimal to no pain in the affected limb. She was symptomatically relieved of pain with no restriction of mobility; follow up visits also showed significant improvement in her condition.

3. Discussion

Sudeck's osteodystrophy which was initially labeled as reflex sympathetic dystrophy but subsequently following Orlando consensus based workshop of 1999 was renamed as complex regional pain syndrome¹. CRPS is a complication after trauma, surgery or vascular event (stroke) although spontaneous development of the disorder has also been described. CRPS may occur at all ages, although the highest incidence is found between 50 and 70 years of age² and it occurs more frequently in women (75%). In CRPS type I minor injuries or fractures of a limb precedes the onset of symptoms. CRPS type II develops after injury to major peripheral nerve³⁻⁵. Modified IASP research diagnostic criteria for CRPS-I

1. Continuing pain, which is disproportionate to any inciting event.
2. Must report at least one symptom in each of the following categories.
 - **Sensory:** Reports of hyperthermia and/or allodynia
 - **Vasomotor:** Reports of temperature asymmetry and/or skin color asymmetry in the affected region.
 - **Sudomotor/edema:** Reports of edema and/or sweating changes and/or sweating asymmetry in the affected region
 - **Motor/tropic:** Reports of decreased range of motion and/or motor dysfunction (weakness, tremor. Dystonia) and/or tropic changes (hair, nails, skin) in the affected region

Must display at least one sign in two or more of the following categories.

- **Sensory:** Evidence of hyperalgesia (to pin prick) and/or allodynia (to light touch and/or deep somatic pressure and/or joint movement)
- **Vasomotor:** Evidence of temperature asymmetry and/or skin color changes and/or asymmetry.
- **Sudomotor:** Evidence of edema and/or sweating changes and/or sweating asymmetry.
- **Motor:** Evidence of decreased range of motion and/or motor dysfunction (weakness, tremor, dystonia) and/or tropic changes (hair, nails, skin).

CRPS remains a clinical diagnosis without any specific laboratory or radiological test. The more common precipitating event of CRPS type I are a trauma affecting the distal part of an extremity (65%) especially fractures, post surgical condition, contusions, and strain or sprain. Less common causes are CNS lesions including spinal cord injuries, CVAs, as well as cardiac ischemia⁷. Weakness of all muscles of the affected distal extremity is often present. Nerve conduction and EMG studies are normal, except in patience in very chronic and advanced stages. Patients with CRPS may develop movement disorder like loss of voluntary control, bradycardia, dystonia, myoclonus and tremor⁶. The symptoms of CRPS type II are similar to those of CRPS I with exception that a lesion of peripheral nerve structure and subsequent focal deficits are mandatory for the diagnosis. Pathophysiology of CRPS I includes an unregulated sympathetic nervous system⁶ an exaggerated neurogenic inflammation⁶, a genetic predisposition^{7,8} and immobilization of the limb (disuse)⁹.

4. Therapy guidelines

Treatment should be immediate and eventually directed towards restoration of full function of the extremity. This objective is best attained with particular emphasis on minimization of pain, restoration of function and improvement on quality of life¹⁰. Interestingly, relative pain reduction of at least 50% and 30 mm on the 100mm VAS are judged to be the result of a "successful" therapy¹¹. Immobilization and careful contra lateral physical therapy should be the acute treatment of choice. (First time analgesic and co analgesic are gabapentin, pregabalin, NSAID (especially preferred cox-2 inhibitors like aceclofenac) opioids and antidepressants. Additionally corticosteroids should be considered if inflammatory symptoms and signs are predominant. In the event of muscle stiffness and muscle cramps in CRPS, baclofen or clonazepam may be the right choice). Blocks of the sympathetic nervous system include addressing component of the SMP (sympathetically mediated pain), repeated stellate ganglion blocks^{12, 13}, lumbar sympathetic blocks, spinal cord stimulation, and continuous intrathecal drug delivery system. Newer techniques include Radiofrequency neurolysis and endoscopic thoracic sympathectomy.

5. Conclusion

CRPS is a severe disabling pain disorder that results in physical as well as emotional and financial consequences to patients. It is often associated with significant disability,

anxiety and depression. New development in drugs and devices should continue and make spinal cord stimulation and the neuraxial routes of analgesia are very promising for into the future.

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