Abstract # 2

Topic: Complex Regional Pain Syndrome Types 1 And 2

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INTRODUCTION:

Complex Regional Pain Syndrome (CRPS) I and II are significant health problems in the U.S. with high rate of treatment failure. The pathophysiology and natural course of CRPS remains obscure, and its management contentious. CRPS is increasingly viewed as a multi-system disorder involving the sensory, sympathetic, motor and cortical components of the nervous system with regional inflammatory changes and psychosocial and functional effects. These syndromes can be characterized by discrete sensory, motor, and autonomic changes. The features of CRPS I include an initiating noxious event like trauma or surgery, and is characterized by allodynia, hyperalgesia, pain disproportionate to inciting event, presence of edema, vasomotor and sudomotor changes. CRPS II shares the same symptomatology as CRPS I, but follows an injury to a peripheral nerve. It is important to distinguish between CRPS I, and CRPS II. The incidence of CRPS type 1 & 2 are about 1% to 15%.The ratio of female: male are 3:1.The affected age group is between 18 and 71 years with a mean age of 41.8 years.

CASE REPORT #1

CRPS TYPE II FOLLOWING A CERVICAL EPIDURAL STEROID INJECTION:

A 48 year-old woman was referred to our pain clinic for complaints of chronic neck pain and right upper extremity pain for several months. A diagnosis of right C5-C6 radiculitis was made and she was scheduled for right translaminar cervical epidural steroid injection. Due to technical difficulty a translaminar C6-7 epidural steroid injection was done during the second clinic visit. With the patient in prone position, C6-C7 interspace was identified fluoroscopically. The skin and the deep tissues were anesthetized with 6 cc of 1% lidocaine. A 20-gauge Tuohy needle was introduced and advanced under fluoroscopy. During the attempt to locate the epidural space the patient developed paresthesia radiating to the right hand. The needle was withdrawn immediately but the symptoms were not relieved. After discussion with the patient, it was decided to postpone the procedure. She was given midazolam 2 mg and meperidine 25 mg intravenously for anxiolysis and pain relief with fair results. She was discharged home & was advised to take hydrocodone 5 mg every 4-6 hrs as needed for breakthrough pain. She was scheduled to return to the clinic in four days for follow up. She returned to clinic the next day stating that the pain was getting worse. She described the pain as “burning and at times alternating with electrical shooting”, present in the right fourth and fifth digits, unrelieved by pain medications. On examination, the patient had allodynia, hyperalgesia to pin prick and localized swelling and sweating of the fourth and fifth digit. However, there was no motor weakness or sensory loss. A diagnosis of CRPS II was made & she was scheduled for right stellate ganglion block. Immediately after the

procedure she reported that the pain had totally disappeared. Follow up with her for the next 2 weeks revealed that she was pain free and the sweating and swelling had disappeared. There was some residual mild paresthesia in the middle, ring and little finger that was improving.

CASE REPORT #2

REACTIVATION OF CRPS TYPE 1 AFTER VENIPUNCTURE:

A 67 year old female with known CRPS I after left lower extremity fracture/repair who had multiple (13) lumbar sympathetic blocks done in the past with complete resolution of symptoms was seen in the clinic with the recurrence of pain, allodynia, hyperalgesia and swelling in the left lower extremity. She was seen again when her symptoms reappeared after a peripheral venous catheter was placed in left lower extremity during work-up of chest pain. She underwent multiple lumbar sympathetic blocks with only partial relief of symptoms.

CASE REPORT #3

SOMATIC BLOCK AS MEANS OF PREVENTING THE RECURRENCE OF CRPS SYMPTOMS:

A 32 year-old otherwise healthy male with a prior history of successfully treated CRPS I from trauma to the right lower extremity, was scheduled for right pilon non-union. A popliteal fossa block was done with 0.25% levobupivacaine with bicarbonate and epinephrine in the preoperative area. A subarachnoid block was done in the operating room at L3-L4 interspace in the sitting position using 1.2 ml of 0.75% bupivicaine, 10 mcg fentanyl and 0.3 mg of morphine. A T10 level sensory level was achieved. The patient tolerated the surgery well and remained pain free in the recovery room. He did not develop the recurrence of symptoms of CRPS after surgery.

DISCUSSION:

CASE REPORT #1

CRPS has been reported following various nerve injuries and trivial procedures. To our knowledge, CRPS II has not been reported following an epidural steroid injection. Every year millions of epidural, spinal anesthesia, nerve blocks, and spinal taps are performed worldwide. Paresthesia which disappears after repositioning the needle is a common occurrence. However, caution must be exercised in those situations when the paresthesia does not disappear even after repositioning the needle tip. CRPS following an attempt to locate the epidural space is rare. However, every physician should be aware of this possibility. Sympathetic blockade by means of stellate ganglion block appeared to be the most promising approach in our patient. The success of stellate ganglion block in our patient suggests that this approach may be optimal in early stages of CRPS.

CASE REPORT #2

CRPS has been reported following various nerve injuries and trivial procedures. However caution must be exercised in those situations. Every physician should be aware of the possibility of CRPS reactivation following a venipuncture or intramuscular injections. Prompt diagnosis and treatment might go a long way in alleviating this dreadful and debilitating complication. Patients should be educated about not having any needle sticks on the affected extremity. They could wear arm/neck bracelet or keep a warning card that specifies that no trauma of any kind to that extremity.

CASE REPORT #3

The central nociceptive system can under go summation as a consequence of a nociceptive afferent barrage. Temporal summation occurs when repetition of a stimulus increases pain perception and results in a short-lasting spinal cord sensitization. Spatial summation occurs when a non painful stimulus is perceived as painful when applied to a wider area, the mechanisms of which are poorly understood. Repeated stimulation increases the excitability of spinal cord neurons, which persists after discontinuing the peripheral stimulation. This phenomenon is called "wind-up" and has an important role in acute and chronic pain syndromes. Epidural anesthesia does not inhibit temporal summation because single stimuli, although not perceived as painful, arrive at the spinal cord and undergo summation and eventually evoke pain. In contrast, intrathecal anesthesia blocks the sensory input, thus completely inhibiting the temporal summation and pain after repeated electrical stimulation. Spatial summation of nociceptive stimulation can occur during regional block. The only proven de-afferentation of nociceptive stimuli occurs with spinal anesthesia. We effectively prevented the recurrence of CRPS I by placing a popliteal fossa block and subarachnoid block, and successfully inhibited the temporal summation and wind-up phenomenon.

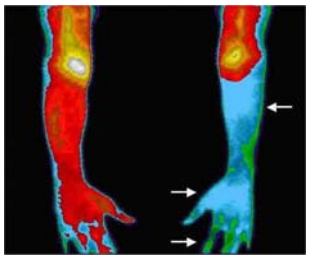
REFFERENCES:

1. SN Raja et al. CRPS I. Anesthesiology 2002; 96.
2. M Curatolo et al. Sensory assessment of regional analgesia in humans. Anesthesiology 2000; 93.

ACUTE CRPS

Stage 1 of CRPS with characteristic signs of inflammation: redness, swelling, warmth and pain with touching.

This patient had severe regional pain, altered skin temperature and color changes, and severe sensitivity to touch in the left arm for over 6 months. The large area of heat loss in the left arm denotes serious sympathetic hyperactivity and supports the diagnosis of stage 1 RSDS/CRPS.



CHRONIC CRPS

Chronic CRPS with color change, swelling and decrease in the muscle strength/ grip in the affected hand.

This 53 year old female suffered three auto accidents and complained of chronic back and limb pain with foot pain upon rising. Various thermo grams indicated focal hot zones over C6, C7, and C8 with loss of associated dermatomes, consistent with CRPS.