DUAL SYSTEM SPINAL CORD STIMULATION FOR CONTROL OF INTRACTABLE PAIN IN PRIMARY ERYTHROMELALGIA: A TECHNICAL CASE REPORT

Bernard R. Canlas M.D.¹, Kent C. New, M.D.,Ph.D.² and Carlos A. Oteyza, M.D.³
Florida Institute of Pain Medicine, Jacksonville, FL¹, St. Vincent’s Brain and Spine Institute, Jacksonville FL² Avenues Cancer Care Institute, Jacksonville FL³

INTRODUCTION
Erythromelalgia (EM) or erythralgia is a rare syndrome characterized by a constellation of symptoms that includes erythema, swelling and intense burning pain of the affected extremities. It is distinguished by two forms. Primary or idiopathic EM occurs in the pediatric age group. Secondary EM which occurs in adults and is associated with an underlying disease or as a result of drug intake. The management of its symptoms particularly for pain is supportive. Unfortunately, even with the use of potent medications including opioids there are still who complain of severe debilitating pain. To date spinal cord stimulation has been used in a 69 y/o patient with secondary erythromelalgia and a thalamic stimulation was performed on a 12 year old boy after a spinal cord stimulator system with percutaneous lead was explanted due to infection. We report of a 15 year old female patient who was diagnosed with primary erythromelalgia by three major hospitals in the southeast. The patient has been placed on methadone,hydrocodone, steroids for control of her symptoms with minimal relief. To date, there has been scant reports on the use of neuromodulatory techniques for alleviation of painful episodes from primary erythromelalgia. More so, there is no detailed description on how spinal cord stimulation was used to control the patient’s pain. There has been no detailed description on how spinal cord stimulation was used to control the patient’s pain. There has been scant reports on the use of neuromodulatory techniques for alleviation of painful episodes from primary erythromelalgia. More so, there is no detailed description on how spinal cord stimulation was used to control the patient’s pain. There has been scant reports on the use of neuromodulatory techniques for alleviation of painful episodes from primary erythromelalgia.

CASE REPORT
MR is a 15 year old girl with a 4 -year history of recurrent attacks of severe burning pain and erythema on both upper and lower extremities. She was diagnosed with primary erythromelalgia (EM) by three major hospitals in the southeast. The patient has been placed on methadone, hydrocodone, gabapentin, fluoxetine, topiramate and prolonged intake of oral steroids for control of her symptoms with minimal relief. To alleviate the burning symptoms in her feet, the patient would immerse them on cold water. She was then referred to our institution for consideration of other possible treatments. The patient underwent stellate ganglion and lumbar sympathetic blocks followed by therapy under the supervision of a physiatrist which gave her moderate relief but was of short duration. Spinal cord stimulation was then offered. A thoracic spinal cord stimulator trial was done first as the patient had worse symptoms on her lower extremities. An epidural electrode (Model 3776 1xSC; Medtronic, Inc., Minneapolis, MN) was inserted with the lead tip inserted at the superior endplate of C3. Stimulation parameters were as follows: 4+, 5-6-, 7+, PW240 microseconds, Amp 1.4V, rate 80Hz (program A), 4+, 5-, 6+, PW150 microseconds, Amp 1.8V, rate 80Hz. The patient used these program 15 hours per day for 7 days. The patient reported significant pain relief. The patient then underwent permanent implantation with a surgical lead (Model 39286 Specify 2x8; Medtronic, Inc., Minneapolis, MN) for the cervical lead and for thoracic region (Model 39565 Specify 5-6-5; Medtronic, Inc., Minneapolis, MN). The lead chosen for the thoracic region was due to its ease of placement in the thoracic region. The longitudinal spacing (edge to edge) is 4.5mm (center to center) is 9mm which is similar to the trial lead (Model 3778 1x8 Compact; Medtronic, Inc., Minneapolis, MN) which is 4mm and 7mm respectively. The electrode length of the Specify 5-6-5 is 4.0mm and the Model 3778 is 3.0mm. The array length of the Specify 5-6-5 is 49mm and the Model 3778 is 52mm. Two weeks after implantation, the patient stopped immersing her feet in water and has significantly decreased her intake of her opioids. The patient was enrolled in intensive rehabilitation and was able to ambulate without the use of a cane. At the end of her rehabilitation program. The patient was able to go back to her school and resume her studies.

DISCUSSION
This case highlights the complexities of the disease and the challenges the physician face when confronted with a rare disease such as this. Most textbooks recommend only supportive treatment for its symptoms. This pediatric patient was placed on potent medications including different opioid medications to alleviate her pain. There has been scant reports on the use of neuromodulatory techniques for alleviation of painful episodes from primary erythromelalgia. More so, there is no detailed description on how spinal cord stimulation was used to control the patient’s pain. It is our hope that through this report, physician’s can use our findings as a starting point when using spinal cord stimulation for this condition.

REFERENCE

Fig. A Characteristic features of primary erythromelalgia. Note the erythematos changes of the patient’s feet. During severe episodes there is significant swelling and transition to purplish discoloration as seen on the far right.

Fig. B. Patient’s upper extremities during her episodes of erythema accompanied by severe pain.

Fig. C. The Medtronic surgical lead Model 39286 Specify 2x8 implanted at the cervical spine and the Medtronic Model 39565 Specify implanted at the level of T10.

Fig. D. Patient’s upper extremities during her episodes of erythema accompanied by severe pain.