Neuromodulation of Superior Cluneal Nerve for Management of Long Standing Buttock Pain

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Introduction

• The superior cluneal nerve (SCN), as the terminal ends of dorsal rami of the lower thoracic and upper lumbar roots, innervates the skin of upper part of the buttocks and can be reason of upper buttock pain.
• SCN divides into 6 branches forming medial, middle and lateral portion at ilium crest (Fig 1).
• Entrapment of SCN branches at an osteofibrous tunnel over the ilium crest can lead to SCN neuropathy causing pain and tenderness over the posterior ilium and upper buttocks with a incidence of 1.6-14%. The medial-, middle- and lateral portion of SCN is involved in 39%, 28%, and 13% SCN entrapment cases, respectively.
• Symptoms can be elicited by different lumbar postures, dynamic motions, or compression at entrapment site.
• Conventional treatment including medications, nerve block, neuroablation, and surgical decompression or neurectomy has limited success.
• Peripheral nerve stimulation (PNS) has also been used to provide pain relief by disrupting the pain signals transmitting along the SCN.

• We report the successful use of StimRouter®, a wireless PNS system, in a patient with neuropathic pain from SCN entrapment.

Case Report

• A 58 yo male with previous medical history of depression, posttraumatic stress disorder and diabetes presented with left flank/buttock pain for 5 years after a fall landing on left back.
• Symptoms was described as constant focal stabbing pain in the left low back “over the bone”, worsens with sitting and bending, lessens with lying flat, interfering daily work.
• Compression over lateral superior iliac crest elicited radiating pain in the lateral SCN innervation area.
• Previous lumbar spine X ray demonstrated multilevel degenerative changes with mild anterolisthesis of L4 on L5.
• Symptoms persisted with pharmacological treatment including duloxetine, gabapentin, levetiracetam, ibuprofen, and lidocaine ointment.
• Ultrasound guided cluneal nerve block with 1% lidocaine and dexamethasone provided significant pain relief for the duration of local anesthetic only.
• Minnesota Multiphasic Personality Inventory (MMPI) was completed prior to the implantation PNS.
• During the implantation procedure, the placement of StimRouter® electrode (Fig 2) was guided by anatomic landmarks, ultrasound for appropriate tissue plane (Fig 3), and, more importantly, paresthesia feedback from patient.
• PNS has provided significant pain relief and increased function.

Discussion

• This patient had localized buttock pain only. However, SCN entrapment frequently produces groin pain as well as leg symptoms (47%-84%).
• Identification of the trigger point at entrapment site, positive tinel-like sign, and pain relief after nerve block is required to confirm the diagnosis of SCN entrapment.
• For patients with severe symptoms refractory to medication and steroid injection, PNS provides an effective minimally invasive option.
• StimRouter® has the advantage of one stage, percutaneous, minimally-invasive 15 cm lead placement with wireless external generator in management of refractory peripheral neuralgic pain without a need of pre-implant trial.
• Limited length, tight contact electrode composition, insurance coverage create limitations for StimRouter® usage.
• SCN is not consistently visible under ultrasound. Appropriate placement of lead heavily relies on patient’s paresthesia feedback.
• Only lateral portion of SCN branch responsible of symptoms in our patient, but with involvement of other branches may need conventional SCS lead placement to cover all 3 portions.
• Neuromodulation with PNS has become an increasingly more important treatment modality for chronic pain.
• Our case suggests the use of StimRouter® can be an effective treatment option for chronic pain over the SCN distribution.

References: