**Multidisciplinary Multiple Sclerosis Clinic Approach to Intrathecal Baclofen Therapy: From Patient Selection to Optimization of Therapy**

Diane M. Masciangelo, MS, BSN, ACNP-BC, Colleen M. O’Connell, MSN, BSN, ANP-BC, Lauren Esposito, PT, DPT, Alyssa Taylor, PT, DPT, Deborah Zook, RN, Sarah Best, RN, BSN, Sarah Grin, MSW, LSW-S, MSICS, Matthew C. Carrero, MD, Jacqueline A. Nicholas, MD, MPH, Aaron L. Boster, MD

**Abstract**

Intrathecal Baclofen (ITB) is a FDA approved therapy for severe spasticity of both spinal and cerebral origin with documented positive clinical outcomes for patients with Multiple Sclerosis (MS), however, this therapy is underutilized in the MS patient population. The presence of spasticity in MS is an early clinical manifestation in an estimated 80% of MS patients; 40-70% of patient reports impairment as a result of their spasticity.

**Objective**

- To provide insight and awareness to MS care providers about the multidisciplinary approach to spasticity care in MS.
- To provide update and spread awareness to MS care providers about the multidisciplinary approach to spasticity care in MS.

**What is Spasticity?**

Spasticity, a component of upper motor neuron syndrome, is a sensory motor processing disorder characterized by a velocity-dependent resistance to passive stretch muscle. Spasticity is caused from damage to the motor pathways, corticospinal/pyramidal tracts from the brain descending to the spinal cord. This results in upper motor neuron signs and symptoms including hyperreflexia and hyperactive deep tendon reflexes. Spasticity can result in increased tone, stiffness, pain, spams, and cramping.

The clinical manifestations of spasticity include:
- Increased muscle tone
- brisk deep tendon reflexes
- Inability of active extension of the affected limb

The severity of spasticity varies, impacting mobility, function, quality of life. If left untreated spasticity can result in medical complications and is associated with increased disability.

**What is ITB Therapy?**

Baclofen administered directly into the cerebrospinal fluid (CSF) bypassing the blood-brain barrier. As a result, effective concentrations of baclofen can be achieved at a fraction of the usual oral dose. Intrathecal baclofen is not effective for all patients with MS, allowing their spasticity to be effectively controlled with minimal adverse effects, however, Montgomery, Swinburne, and Gudgeon found 4 of 5 patients treated with ITB had significant improvement in their mobility and quality of life with the ITB therapy.

**Patient Selection**

In order to be considered for ITB therapy, the patient must have the following:
- Hyperreflexia that causes significant impairment
- Oral antispasmodics are unable to tolerate or maintain a remodeling regimen or dose escalation due to adverse effects
- Patient is unable to tolerate or maintain a dose escalation
- Physical limitations are ineffective

**Patient Education**

Education is key; begins with initial discussion regarding ITB therapy with patient and family/caregiver. Follow up appointment to discuss results.

**ITB Test Dose/Trial**

Packet for ITB Test Dose Day:
- Prepare for ITB Test Dose Day
- What to expect on ITB Test Dose day/overview of process
- Pre and post procedure instructions
- ITB Test Dose side effects
- Signs of baclofen overdose and withdrawal

**Goals of ITB Therapy**

It is essential as a lens that we identify and clearly communicate the individual goals of therapy, provide education about the complications of therapy, and ensure commitment from the patient/family/caregiver to attend frequent offtimes visits during the titration and optimization phase.

Providing a multidisciplinary approach in ITB therapy is imperative that prior to implantation the patient/family/caregiver understand and agree to the following:
- To be seen in clinic weekly to be weekly for ITB pump adjustments while the ITB pump is being titrated/optimized (Optimization may take 6-12 months).
- To attend all scheduled visits with pump (most often every 1-3 months, but can be as infrequent as every month for some patients)
- To maintain over-the-counter medications, therefore agree to participate in ITB and PT for strengthening when recommended
- To maintain spasticity and symptoms of baclofen withdrawal: itching, increased stiffness, fever, sedation, confusion, muscle breakdown, and in extreme cases kidney damage, severe weakness, therefore agree to participate in ITB and PT for strengthening when recommended
- To present to the emergency room with signs of baclofen withdrawal or ITB Test Dose/Trial
- To carry on-discharge to bottle of baclofen at all times in case of baclofen withdrawal
- To be seen in clinic weekly for post ITB pump adjustments while the ITB pump is being titrated/optimized

**Implantation Phase**

- Referral placed to Neurosurgeon or Interventional Radiology for implantation. Thirty of these patients have been implanted with 1 pump, twenty-three have been implanted with 2 pumps, thirty-six have been implanted with 2 pumps, twenty-six have been implanted with 3 pumps, ten have been implanted with 4 pumps, and four patients have numbering implanted with 5 pumps.

**References**


