Effective Treatment Options for Multiple Sclerosis Symptoms

Leah Memmo
Department of Integrated Science at Saint Vincent College

Introduction:
Multiple sclerosis is a widespread disabling neurologic disease of the brain and spinal cord that is still without a cure. The disease results from the immune system attacking the protective myelin sheaths of nerve fibers, causing nerves to deteriorate. This nerve damage ultimately inhibits communication between the brain and rest of the body. Although a cure for this progressive disease has yet to be discovered, there are treatment options to manage the symptoms. Some of the most debilitating symptoms are spasticity (continuous muscle contraction) and weakness in limbs, which both interfere with normal gait (walking). The main question that will be answered is how do physical therapy, the muscle relaxant intrathecal baclofen, and the muscle strengthen dalfampridine compare in terms of improving the gait of multiple sclerosis patients suffering from either spasticity or muscle weakness?

Background:
Multiple sclerosis is most prevalent among young and middle-aged adults between the ages of 20 and 50. The most common symptoms often negatively impact movement, such as weakness in limbs, lack of balance, unsteady gait, and spasticity. There are four possible disease courses of multiple sclerosis, which include:
- Clinically Isolated Syndrome (CIS)
- Relapsing-Remitting (RRMS)
- Secondary Progressive (SPMS)
- Primary Progressive (PPMS)

Although there is currently no cure for multiple sclerosis, there are treatment options that focus on accelerating recovery from attacks, slowing disease progression, and managing symptoms. Medical professionals will recommend a treatment option based on a patient’s symptoms and disease course.

Physical Therapy Treatment Option:
This particular type of therapy helps to strengthen muscles and improves gait, balance, coordination, and spasticity.
- Davies et al. suggested that high-frequency physical therapy may be more beneficial than a specific activity focus in order to improve the mobility and balance of multiple sclerosis patients.
- Eibom et al. concluded that the most significant improvement in muscle tone and self-perceived spasticity outcomes were a result of exercise therapy.

Figure 2. Representation of a multiple sclerosis patient being treated by a physical therapist.

Intrathecal Baclofen Treatment Option:
Intrathecal baclofen is more effective treating spasticity and has fewer side effects than the pill version of baclofen because it delivers the drug directly into the cerebral spinal fluid.
- Sammaraiee et al. concluded that intrathecal baclofen is an effective and safe long-term treatment option for multiple sclerosis related spasticity.
- Gunnarsson and Samuelsson concluded that patients suffering from spasticity were highly satisfied with intrathecal baclofen as a treatment option.

Figure 3. Representation of a pump surgically inserted underneath the skin of the belly that stores and delivers baclofen through a catheter into the spinal fluid.

Dalfampridine Treatment Option:
Dalfampridine is an oral medication that blocks potassium channels on nerve fibers, which improves the conduction of nerve signals and leads to an increase in walking speed.
- Plummer et al. concluded that combining dalfampridine with multicomponent physical therapy improves gait speed more than dalfampridine alone.
- Crayton et al. concluded that there is a significant association between dalfampridine and gait improvement.

Analysis:
- Both pharmacologic and non-pharmacologic approaches should be utilized in order to yield the greatest improvements.
- Plummer et al. suggested that multicomponent physical therapy programs that include strengthening, balance, and walking exercises are more beneficial for multiple sclerosis patients than only focusing on one particular type of training.
- Crayton et al. determined that dalfampridine treatment extends further than only improvements in gait by also improving work, social, and daily activities of multiple sclerosis patients.

Conclusion:
Physical therapy, intrathecal baclofen, and dalfampridine are examples of effective treatment options for the symptoms of spasticity and/or muscle weakness. Health care professionals should be well informed what these treatment options entail so that they can provide their patients with accurate and efficient information. Communication between health care professionals and multiple sclerosis patients is vital so that the appropriate treatment option can be prescribed based on one’s symptoms and disease course. A combination treatment option of both pharmacologic and non-pharmacologic approaches should be considered.

Bibliography:
Gunnarsson, S. & Samuelsson, K. (2015). Patient experiences with intrathecal baclofen as life changing because the fear of falling or harming oneself/others due to involuntary movements had finally disappeared. Samuelsson’s study described intrathecal baclofen as life changing.

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