Multiple Sclerosis and Manual Osteopathy

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Introduction

Multiple Sclerosis (MS) is an autoimmune disease that results in the demyelination of the central nervous system. It affects mainly women, but also affects men at a rate of about ninety out of a hundred thousand people in the United States (V. Battles, 2016). There is no definite cause of MS, some say it could be viral or genetic considering it appears mostly in women, but there is no known cause. MS currently does not have a cure, so patient's must live with the symptoms and effects of the disease.

The myelin sheath is required for the transmission of nerve impulses throughout the nerve fibers. MS causes inflammation of the myelin sheath which results in a reduced speed of impulse transmission and potentially a complete distribution in impulse due to damage of the myelin and the formation of scar tissue. MS causes a person an inconsistent variety of fluctuating symptoms including, fatigue, weakness, gait imbalances, numbness, bladder, and visual problems. There are four different types of MS; relapsing remitting, primary progressive, secondary progressive and progressive relapsing. Each type is a different kind of pattern of attacks and recovery that you may see in a patient with MS. Generally speaking, the disability increases throughout the lifespan of a patient with remitting stages but very rarely a full recovery from a relapse.

Manual Osteopathy is a "holistic manual medicine" that uses hands on treatment to diagnose and treat the body (NAO, 2020). In the 1800's a licensed physician named Andrew Taylor Still became dissatisfied with the medical field. This dissatisfaction resulted in him studying human anatomy for many years in search of an alternative way of treating diseases. Andrew Still found an anatomy based approach to treatment of diseases that he called Osteopathy. He "reasoned that strains or distortions of the fascia, ligaments, or muscle fibers surrounding the blood and lymph vessels and nerve bundles could be the cause of ischemia and congestion" (J.M.Burns, K.A. Clark & T. Singleton, 2015). Over time, Andrew Still applied his knowledge of physiology and was able to make connections between "structural imbalances, including misaligned vertebrae, and his patient's disorders" (J.M.Burns, K.A. Clark & T. Singleton, 2015). From the findings of these connections of the body, Andrew Still was able to fully find a cure or at least a partial cure for his patients.

Manual Osteopathy is non-invasive and uses gentle manual manipulation to enhance altered structural, mechanical and physical function (J.M.Burns, K.A. Clark & T. Singleton, 2015). Manual Osteopathy can be used to help relieve symptoms of patients with MS, and help improve their quality of life. Along with Manual Osteopathy treatments it is found that the treatments combined with strength training can help reduce the main symptom of MS, fatigue.

Multiple Sclerosis

Multiple Sclerosis (MS) is a non fatal lifelong disease that affects the central nervous system. MS causes inflammation and damage to the myelin sheath of the nerve fibers. The myelin sheath is necessary for nerve conduction to the CNS and damage can slow down the

nerve impulse and possibly lead to complete nerve damage. This causes scar tissue and stops the impulse from travelling to the brain. MS currently does not have a cure.

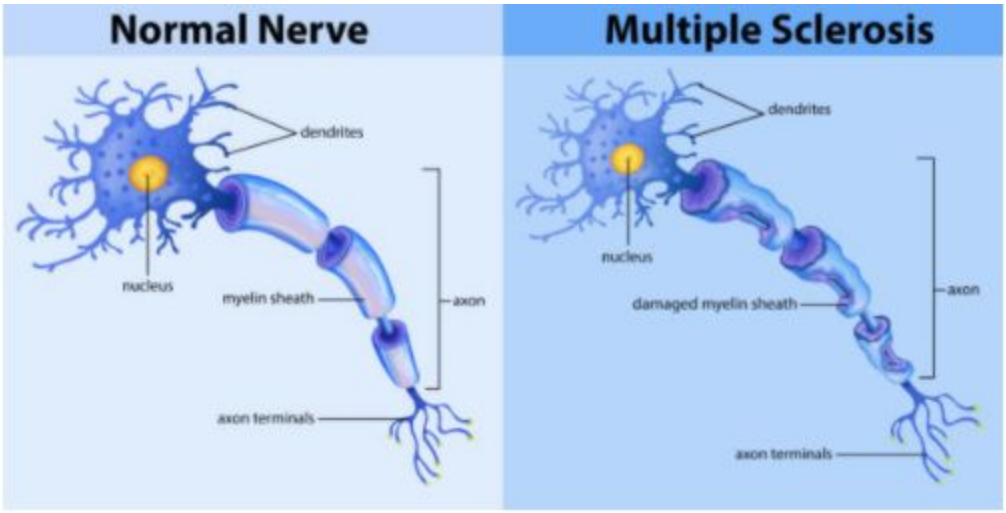
In MS the T cells interfere and attack the central nervous systems oligodendrocytes that produce myelin. This causes demyelination which eventually leads to inflammation and loss of myelination, eventually producing scar tissue on the nerve fibers of the brain (Chauhan, 2020). MS is more common in women than men and it can occur at any age but is most commonly found in between the ages of 20- 49 (MS Society of Canada, 2020). As this disease develops slowly over time it affects multiple systems of the body; including: motor and sensory systems, the autonomic nervous system, the cerebellar, and the cranial nerves. The most common sign of multiple sclerosis is fatigue, followed by weakness, numbness and ataxia. Ataxia is when a patient may seem uncoordinated, almost as though they were drunk.

With no defined cause of MS, some scientists believe there could be multiple factors. There is currently ongoing research for the cause of MS in immunology, epidemiology, genetics, and infectious agents. Eventually researchers will find a potential cause of the disease and may even find a cure, or at the least find a prevention to the disease. Currently treatment is based on reducing and managing symptoms and maintaining the patients quality of life.

Pathology

The main pathology of MS is the multiple areas of myelin sheath loss in the CNS due to T cells attacking the myelin. The affected areas are also called plaques or lesions (Lucchinetti, Popescu & Pirko, 2013) and are found in the brain and spinal cord, especially in the white matter, but can also be found in gray matter. MS only affects the CNS; it does not attack the peripheral nervous system. It will appear in people between the ages of 10 and 60 and at 22 years of age is where you will find the peak of onset. MS attacks are different for everyone, they all have different patterns on when, and where but almost all the time the patients disability will progressively get worse after each attack. The patient may be able to make a full, partial, or no recovery after each attack.

Figure 1:
Visualization of a normal nerve, and a nerve affected by MS where you can see the damage to the myelin sheath.



Types of Multiple Sclerosis

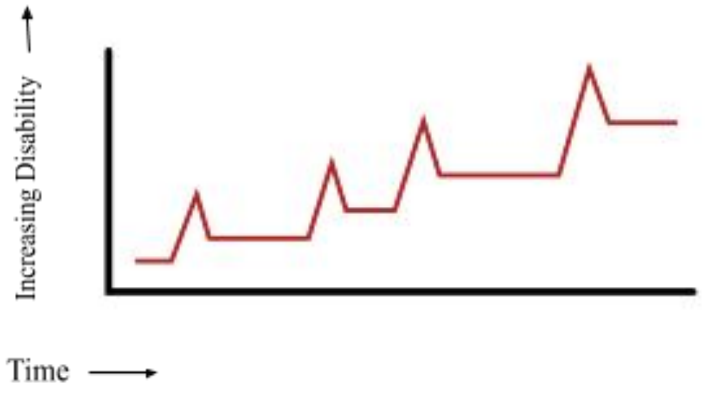
There are 4 main types of Multiple Sclerosis:

1. Relapsing Remitting
2. Primary progressive
3. Secondary Progressive
4. Progressive Relapsing

Relapsing Remitting Multiple Sclerosis:

This is the most common. It happens in "85-90%" (Chuahan, 2020) of patients. It is fluctuating relapses and remission. The attacks are unpredictable, and can last anywhere from days to months and may or may not leave permanent damage. Remission could "last for months to years, during which time the person might appear to be disease free" (Battles, 2016).

Figure 2:
Graph representing increasing disability over time of Relapsing Remitting Multiple Sclerosis



Primary Progressive:

Only happens in 10 - 15% of patients. This type consists of progression of the disease from the initial onset and does not have any remissions. It is a steady progression in disability with no attacks.

Figure 3:
Graph representing increasing disability over time of Primary Progressive Multiple Sclerosis

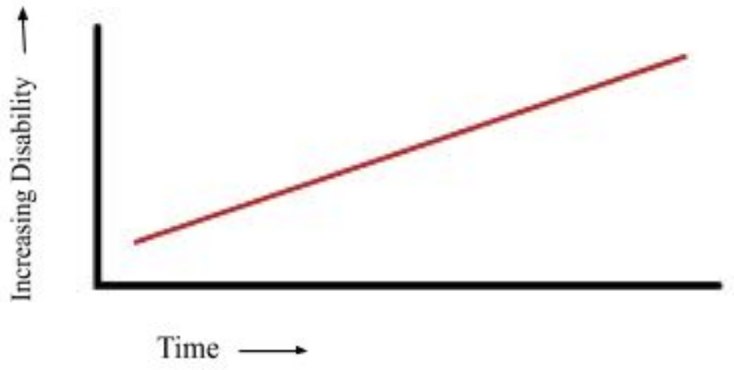


Figure 3:

Secondary Progressive:

This type starts off as Relapsing remitting from the initial onset. The patients will have relapses and remission but then it will turn into a continuous progression of disability with no remission. Most patients that have Relapsing Remitting MS will eventually show signs of secondary progressive patterns.

Figure 4:
Graph representing increasing disability over time of Secondary Progressive Multiple Sclerosis

Progressive Relapsing:

This is the least common type of MS. The patient's disability increases from the initial onset, with some attacks throughout the patient's lifetime, but the patient never truly recovers. It is a steady neurological decline.

Figure 5:
Graph representing increasing disability over time of Progressive Relapsing Multiple Sclerosis

Signs and Symptoms

MS will affect many body systems such as motor, sensory, cerebellar, autonomic, cranial nerves and psychiatric. No two people will experience the same symptoms or patterns. The main symptoms of an attack are fatigue, weakness, numbness, ataxia and gait imbalances. Optic neuritis, transverse myelitis, and urine incontinence are present in patients, as well as fatigue, and troubles concentrating. Other symptoms also include:

- Emotional changes, depression
- Pseduobalbar palsy
- Lehermitte's sign (electric sensation down the back)
- Dysarthria
- Dysphagia
- Uhthogg's phenomenon (worsening of symptoms with heat, such as hot showers etc.)
- Spasticity - more common in the lower limbs
- Vision problems - blurred vision or poor color vision, pain
- Bowel disturbances
- Bladder urgency or incontinence and can lead to bladder infections

Signs and symptoms of an attack may last anywhere from 2-6 weeks, and can even last up to 10-12 weeks.

Diagnosis and Lab Findings

Diagnosing MS is difficult because it involves ruling out causes of other problems that are causing the symptoms. There is no just one test to determine if a patient has MS or not. A main diagnosis is 2 or more neurological attacks at 2 different locations in the CNS and two different times. Magnetic Resonance Imaging (MRI) can show photos of the lesions. Another

good option to help diagnose MS is evoked potentials. Evoked potentials are certain tests used to measure the speed of nerve conduction. Since MS damages the myelin sheath, nerve conduction is slowed and this test will help show and support signs of demyelination. One of the biggest indicators of MS is increased Immunoglobulin G (IgG) index which is found in the cerebral spinal fluid (CSF) through a lumbar puncture. Oligoclonal bands are a strong indicator of MS as well. In conclusion your main lab findings of MS comes from lumbar punctures with risen IgG index and findings of oligoclonal bands.

Manual Osteopathy

Manual Osteopathy is a hands on treatment, used to help the body self heal and self regulate. It was founded by Andrew Taylor Still in the 1870's, who wanted to improve the general treatment of diseases, as well as surgeries and obstetrics. Manual Osteopathy focuses on the body as a whole to restore it to its natural and optimal functioning. Manual Osteopaths will help aid your body into healing itself. Many techniques are used during a treatment, but mainly manual palpation and osteopathic manipulative treatment (OMT) are used to help diagnose and treat their clients. Other techniques to help aid the body that practitioners will use are craniosacral, muscle energy, strain/counterstrain, myofascial, and soft tissue techniques as well as gentle spinal, and joint mobilizations.

With OMT the practitioner will move the patients muscles and joints using specific techniques. These techniques are applied with gentle pressure, and sometimes resistance to help stretch a muscle even more. Manual Osteopaths see the body as a unit and treat the body as one. We will find the root of your dysfunction and treat your whole body not just the area where your main complaint is. "Manual osteopathy is best known for treatment of neuro-musculo-skeletal disorders such as back and neck pain, sciatica, sporting injuries and postural strain" (NAO, 2020)

Since Manual osteopathy and OMT is one of the best known treatments for neuro-musculo-skeletal disorders, it is a good option for a MS patient. Since there is no cure, and OMT is not a cure for MS, we can only help to improve the patient's quality of life.

Physical Exam

A patients' physical exams with MS may change from exam to exam, it varies because of the patterns of the disease and findings that will change depending on if the patient is having a relapse or feeling worse. During the exam all systems must be tested including motor, sensory, and musculoskeletal including reflexes. The patient's gait, skin, vision, and coordination should also be examined. As well as all the cranial nerves need to be examined. There are findings in the optic nerve related to MS, such as inflammation or demyelination of the nerve. As well as many optic movement symptoms such as diplopia, nystagmus, or Marcus-Gunn pupil. Ataxia is also a finding you will find due to cerebellum damage. During a physical exam you can also find speech problems, such as dysarthria and slurred speech. You must also test for L'hermitte's sign and Charcot's triad.

Multiple Sclerosis and Osteopathy

Since MS is a disease with no cure, the main focus is improving homeostasis and quality of life for a patient. The gentle touch of osteopathic manipulative treatment can help alleviate pain, and make day to day activities easier. Muscle Energy Techniques (MET) as well as strength training, has shown to help improve quality of life in MS patients. Since regular exercise can help maintain normal body function in MS patients, aerobics based exercises are not recommended. Patients tend to respond better to strength based exercises. Swimming although is a good option since it removes gravity. This makes it easier for a more disabled patient to perform movements, which he or she may not be able to do under normal conditions.

OMT treatments benefit patients in manipulation of the spine, and re-educating the muscles along the spine. Patients with long term MS and no help, their body's tend to be very unbalanced and not functioning to their highest capacity. Some MS patients suffer from somatic - musculoskeletal-dysfunctions from their MS attacks and OMT treatment can have benefits to those patients. OMT helps realign the body and help body fluids move easier, creating a better body to live in. Other treatments that can help are cranial sacral osteopathy. This will help stimulate the cerebral spinal fluid to help better flow throughout the CNS, since the flow of impulses is already limited in MS we want to help the CNS as much as possible. Another treatment is myofascial techniques to help decrease inflammation and reduce muscle spasms.

With fatigue being a main complaint of people with MS, improving their breathing can be very beneficial. OMT techniques that assist in breathing such as doming, and thoracic releases can help relax muscles that are restricting movement of the ribs and increase oxygen in the lungs. Teaching the patient proper breathing techniques will help reduce fatigue as well, and it is something they can do anywhere, and anytime.

Another main complication of MS is a patient's gait. This is where OMT can really excel to help improve a person's gait and improve their quality of life because they can walk better, and easier. In some cases the patient's deconditioning may not be in a state where you can tell them you can make them walk again. The goal's need to be realistic, but for cases where a patient is still capable of walking on their own, maximizing their ability to walk is essential. OMT to the sacrum, pelvis, and lumbar can help diagnosis and treat muscle imbalances that contribute to a spastic gait, and increase flow of fluids through the lymphatic system, blood, and cerebral spinal fluid systems.

Treating MS patients you must be careful to not increase their fatigue. This is why aerobic exercise is not recommended, because patients have found their fatigue is prolonged and they have a harder time recovering. Short strength exercises combined with OMT will help increase the patient's strength and gait without increasing fatigue. Strength exercises minimum 2 times a week is recommended and what most case studies base their findings off of, but depending on each different MS patient, they may be capable of more strength training a week. Always to be monitored to make sure the patient is not over training, increasing their fatigue and losing their ability to recover.

Conclusion

In conclusion, there is still more research to be done on how OMT affects MS patients, but we do know that OMT techniques combined with strength exercises can help improve a patient quality of life. Osteopathy can create a better body to live in naturally, and is non invasive. Without a cure for MS, creating a better body for the patient to live in is essential.

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