Multiple Sclerosis

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**Multiple Sclerosis**
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**Introduction**

Multiple sclerosis (MS) is an advanced pathophysiological disease that is relevant to advanced practice nursing. It is the “most common immune-mediated inflammatory demyelinating disease of the central nervous system” (Oleks et al., 2019). The exact cause of MS is still unknown; however, it is characterized by exacerbations of neurological dysfunction due to inflammatory demyelination (Huang, Chen, & Zhang, 2017). Consequently, the treatment of MS requires a multi-disciplinary approach, with nurses at the heart of the team. Hence, an advanced practice nurse will need to be able to recognize the signs and symptoms of MS for proper diagnosis and must be familiar with the current trends in patient management and treatments of the disease. This helps to support and advocate for the best possible intervention strategies (acceptable to the patient and relevant to decrease clinical pathology).

**Reason for Study**

- MS is the leading cause of neurologic disability in young adults. This disease is an important socio-medical, economic, and public health problem today.
- Due to the unpredictable and highly variable course of MS, nurses need to understand their disease progression and the impact of the disease and relevant to the patient and relevant to the patient and relevant to the patient.
- Due to the unpredictable and highly variable course of MS, nurses at the heart of the team will need to be able to recognize the signs and symptoms of MS.
- Aggravating factors are heat, humidity, stress, and negative people. Relieving factors are rest, sleep, exercise, and stress management.
- Many new management options have been found in the past 20 years (Oleks et al., 2019). Nurses need to keep up with changes in treatments to help educate patients and improve their understanding of the disease.

**Underlying Pathophysiology**

The exact cause of MS is unknown. Many theories exist to answer this question, several of which are listed below:

- One widely accepted theory is the pathogenesis of MS is that it becomes an autoimmune-inflammatory-mediated disease (Oleks et al., 2019). It calls through several mechanisms including the establishment of ectopic lymphoid follicles within the CNS (Huang et al., 2017). These are also thought to affect MS development by targeting specific immune responses. A dysfunction in these processes can have a role in the cause of MS (Oleks et al., 2019).
- One theory suggests that the Epstein-Barr Virus (EBV) could cause MS. The upregulation of antigen specific cytotoxic T cells stays in the body for several years after the initial infection. Autoreactivity results when the cytotoxic T cells target self-peptides in the CNS (Spagnuolo, Paron, & Williams, 2017). While it is not understood what exact role heredity plays in developing MS, there are some genes that lead to an increased risk. Specific genes related to inflammation have been found in an increased risk of MS. People who have dysregulation of T-cell differentiation have a higher prevalence of MS (Spagnuolo et al., 2017).
- Dendritic cells (DC) are part of the pathogenesis of MS. Different types are found in which the antigen and cerebrospinal fluid of people who have MS (Spagnuolo et al., 2017).

**Implications for Nursing Care**

The unknown exact cause of MS, the wide variety in symptoms, and the unpredictable nature of the disease has significant implications for the patient and the nurse. Faye et al. (2015) suggests a multi-disciplinary approach to adequately meet all of the patients complex and often changing needs. This team can include a neurologist, nurse, primary care provider, other specialists, and professionals outside of the health care sector (Faye et al., 2016).

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**Significance of Pathophysiology**

In MS plaques form in the CNS and combined with inflammation, demyelination, axonal injury and axonal loss are the defining processes of the disease (Huang et al., 2017). The plaques are expressed in all forms of MS. Over time these plaques disappear and return at different intervals (Huang et al., 2017). The location of the plaques dictates the symptoms expressed and the ability of the patient to function.

The disease is characterized by continuous, irreversible neurologic impairment between exacerbations (Huang et al., 2017). In primary progressive MS the patient has a gradual progression of the disease that is continuous and irreversible. In secondary progressive MS is characterized by a pattern of exacerbation and remission that is non-reversible (Huang et al., 2017). The prevalence of MS is increasing globally.

**Signs & Symptoms**

The signs and symptoms of MS vary depending on the affected part of the Central Nervous System (CNS) (Arneth, 2019).

- **Fatigue** (Arneth, 2019)
- **Anxiety** (Arneth, 2019)
- **Depression** (Arneth, 2019)
- **Sensory loss** (Huang et al., 2017)
- **Visual disturbances** (Huang et al., 2017)
- **Double vision** (Huang et al., 2017)
- **Muscle weakness** (Huang et al., 2017)
- **Ataxia** (Huang et al., 2017)
- **Impaired balance** (Huang et al., 2017)
- **Fatigue** (Zhao et al., 2019)
- **Edema** (Zhao et al., 2019)
- **Bowel and bladder dysfunction** (Arneth, 2019)
- **Depression** (Kamm, Dietz, & Polman, 2014)
- **Sleep disorders** (Kamm, Dietz, & Polman, 2014)
- **Spasticity** (Kamm, Dietz, & Polman, 2014)
- **Tremor** (Kamm, Dietz, & Polman, 2014)

**Conclusion**

Around the globe around 2.3 million people are diagnosed with MS (Arneth, 2019). The complex pathophysiology of MS and the progression of the disease makes care complicated. While all patients show destruction of myelin on the axons, symptoms vary widely depending on the location of the plaques. The ability to interpret the exacerbations signs and symptoms of MS is an important competency to possess. Nurses work as part of a multi-disciplinary team to provide a wide range of treatment options. Excellent nursing care focuses on the patient’s quality of life.