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RESEARCH ARTICLE

CURRENT ISSUES AND CONCEPTS OF MULTIPLE SCLEROSIS

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ABSTRACT

Multiple sclerosis is an autoimmune inflammatory demyelinating disease of the CNS. It is a progressive, immune-mediated disorder. Multiple sclerosis interrupts essential communication between brain and body.MS can damage your eyes but rarely permanent. The protective coverings of nerve cells are damaged, which leads to diminished function in the brain and spinal cord. MS is a disease with unpredictable symptoms that can vary in intensity. While some people experience fatigue and numbness, severe cases of MS can cause paralysis, vision loss, and diminished brain function. (1). The resulting inflammatory cascade releases cytokines and initiates destruction of the oligodendrocyte-myelin unit by macrophages. The axonal loss is the cause of the phase of the disease in which there is a progressive and persistent disability. (2) There is no cure to multiple sclerosis. Treatments attempts to improve function after an attack and prevents new attacks. Introduction of new drugs in last years building experience with their use.

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INTRODUCTION

However, none of these theories has been proven, and the cause of MS remains unknown. It's not contagious, and can't be passed from person to person (Danette, ?) Symptoms may disappear after a few days or weeks, although examination often reveals residual deficits (Stephen, 2012). In multiple sclerosis (MS), neurodegeneration is the main reason for chronic disability (Michael Dietrich, 2018). Multiple sclerosis (MS) is an inflammatory autoimmune disorder that involves demyelination, oligodendrocyte death with subsequent axonal damage, and eventually loss of neurons in the central nervous system (Compston, 2008). Oxidative stress contributing to the detrimental process of demyelination, axonal damage, and inflammation in both MS (Witherick, 2010 and van Horssen 2011) Cognitive dysfunction is frequent in multiple sclerosis patients and has important and negative consequences for daily activities and quality of life of subjects (Claudia Niccolai, 2017).

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Poly (ADP-ribose) polymerase-1 (PARP-1) has been implicated in the pathogenesis of several central nervous system(CNS) disorders (Vimal Selvaraj, ?). Deficiency Increases the Severity of Disease in a mouse Model of Multiple Sclerosis (The Journal of Biological Chemistry, 2009). Poly (ADP-ribose) polymerase-1 $(PARP-1)^2$ belongs to a family of enzymes that regulate several cellular processes by adding poly (ADP-ribose) polymers to specific proteins (Chambon , 1963; Kim, 2005). Based on sequence homology, 18 PARP family members have been identified in the human genome (Ame´, 2004). Multiple sclerosis (MS) is a disease that is found only in humans (Bjelobaba, 2018). Multiple B cell-dependent mechanisms contributing to inflammatory demyelination of the CNS have been explored using experimental autoimmune encephalomyelitis (EAE), a CD4 T cell-dependent animal model for multiple sclerosis (Rangachari, 2013). Lipoic acid (LA) is an effective antioxidant that possesses therapeutic properties in the treatment of various illnesses (Peter Kovacic, 2018). Multiple sclerosis (MS) is a chronic inflammatory demyelinating disease of the central nervous system (CNS) (XuemeiQiu, 2018). Multiple sclerosis (MS) is the most frequent chronic

inflammatory autoimmune neurodegenerative disorder of the central nervous system (CNS) (Rangachari, 2013). It is a debilitating disease with high disability and recurrence rates, endangering over one million people worldwide (McFarland, 2007).

History

Robert Carswell a French professor of pathologic anatomy, described and illustrated many of the disease's clinical details (Compston, 1988), Specifically, Carswell described the injuries he found as "a remarkable lesion of the spinal cord accompanied with atrophy (Compston, 2008). Georg Eduard Rindfleisch (1836–1908) noted in 1863 that the inflammation-associated lesions around blood vessels (*Lassmann, 1999 and Lassmann, 2005*). The French neurologist Jean-Martin Charcot (1825–1893) was the first person to recognize multiple sclerosis as a distinct disease in 1868 (Compston, 1988).

Significant gap in Research

Less commonly, symptoms are steadily progressive from their onset, and disability develops at a relatively early stage (primary progressive disease) (Stephen, 2012). Disease-modifying treatments for multiple sclerosis reduce the incidence of relapses and may prevent disease progression, but the influence on cognitive impairment is unclear, due to several limitations of the available studies currently (Claudia Niccolai, 2017).

Where the research go net?

Research into pathogenesis focuses on explaining the ultimate causes of MS onset and progression and explaining the heterogeneous behavior. Pathological research tries to obtain correlations for the observable biomarkers. (25) Also, some external agents can modify the disease course. Smoking is known to modify (for worse) the course of the disease, and recently this effect has been seen via MRI (Gamze Durhan, 2016).

Major Advances and Discoveries

Chemotherapeutic agents, such as *cyclophosphamide* and *azathioprine*, have also been used. Drugs currently approved for MS are indicated to decrease relapse rates or in some cases to prevent accumulation of disability (Richard, ?). (Richard, ?) Multiple sclerosis (MS) is an inflammatory demyelinating disease of the central nervous system that may entail severe levels of disability in the long term. In Clinical practice, MS-related fatigue should be assessed and managed by a multidisciplinary team involving neurologists, (Carmen, 2016). Examination of the CSF in individuals with MS shows mildly elevated protein level and in one-third of cases a moderate pleocytosis. IgG levels in CSF are increased and oligoclonal IgG bands are usually observed on immuno electrophoresis, are indicative of the presence of a small number of activated B-cell of clones, postulated to be self-reactive, in the CNS. Radiologic studies using magnetic resonance imaging have taken on a prominent role in assessing disease progression, these studies, when correlated with autopsy studies as well as clinical findings indicate that some plaques may be clinically silent even in otherwise symptomatic patients (Robbins, ?).

Current Debate

There is ongoing research looking for more effective, convenient, and tolerable treatments for relapsing-remitting MS; creation of therapies for the progressive subtypes; neuroprotection strategies; and effective symptomatic treatments (Cohen, 2009). Several more oral drugs are under investigation, including ozanimod, laquinimod, and estriol. Laquinimod was announced in August 2012 and is in a third phase III trial after mixed results in the previous ones (Jeffrey, 2012). Biomarkers that help with diagnosis and prediction of disease progression is ongoing (Miller, 2011). New diagnostic methods that are being investigated include work with anti-myelin antibodies, and studies with serum and cerebrospinal fluid, but none of them has yielded reliably positive results (Harris, 2009). Multiple sclerosis is typically diagnosed based on the presenting signs and symptoms, in combination with supporting medical imaging and laboratory testing (Tsang, 2011). Local injury or inflammation, as in arthritis, can also cause muscle spasm, and chronic back pain is also often associated with local muscle spasm (Rang, ?) Baclofen is a selective agonist at $GABA_B$ receptors. The antispastic action of baclofen is exerted mainly on the spinal cord. It is effective when given by mouth, and is used in the treatment of spasticity associated with multiple sclerosis or spinal injury. Lofen produces various unwanted effects, particularly drowsiness, motor incoordination and nausea, and it may also have behavioural effects. Tizanidine is an α2-adrenoreceptor agonist that relieves spasticity associated with multiple sclerosis and spinal cord injury. Dronobinol, however, showed no significant effect on muscle spasm, tremor, bladder control or disability, although the patients reported subjective improvements (Zajicek, 2003).

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