Multiple Sclerosis ↔ Lyme Disease

CONTROVERSIES

The 10th National Congress of Ophthalmology, Sinaia 2011
1985 **Demyelinating encephalopathy in Lyme disease.**
“A 38-year-old man from southeastern Connecticut developed a diffuse encephalopathy with partial complex seizures, followed weeks later by arthritis, cryoglobulinemia, and increased serum IgM. CT showed confluent low-density lesions in the deep cerebral white matter consistent with demyelination. Neither the encephalopathy nor the CT abnormalities improved. Lyme disease was diagnosed serologically 4 years later.”

1988 **Multiple sclerosis is a chronic central nervous system infection by a spirochetal agent.**
“Multiple Sclerosis (MS) is a chronic central nervous system (CNS) infection similar to Lyme Disease or Neurosyphilis in its latency period, pathogenesis, symptoms, histopathology and chronic CNS involvement.”

1985 **Chronic central nervous system involvement in Lyme borreliosis.**
"We describe four patients with marked chronic meningoencephalomyelitis caused by tick-transmitted Borrelia burgdorferi infection. Imaging techniques showed either MS-like lesions or evidence of vascular involvement, as in other spirochetal infections, especially in meningovascular syphilis."

1989 **Clinical pathologic correlations of Lyme disease.**

1989 **Clinical manifestations of Lyme disease in the United States.**

1989 **Neurologic manifestations of Lyme disease, the new "great imitator".**
“Third-stage parenchymal involvement causes a multitude of nonspecific CNS manifestations that can be confused with conditions such as multiple sclerosis, brain tumor, and psychiatric derangements.”
1990 Multiple sclerosis or Lyme disease? a diagnosis problem of exclusion.
“In a late period of the disease demyelinating involvement of central nervous system can develop, and multiple sclerosis can be erroneously diagnosed.”

1991 Diseases that mimic multiple sclerosis.
“Dr Scott compares typical findings of multiple sclerosis with those of the four diseases that are sometimes mistaken for this syndrome.”

1993 The presence of anti-Borrelia burgdorferi antibodies in a group of multiple sclerosis patients in eastern Sicily. Preliminary data.
“ The authors evaluate the presence of anti-Borrelia burgdorferi antibodies in a group of polysclerotic patients of Eastern Sicily, in order to verify or dismiss a correlation between Borrelia infection and demyelinizing syndrome. “

1996 Inflammatory brain changes in Lyme borreliosis. A report on three patients and review of literature.
“We conclude that cerebral lymphocytic vasculitis and multifocal encephalitis may be associated with B. burgdorferi infection. ”

Multiple sclerosis vs Lyme disease: a case presentation to a discussant and a review of the literature.

“The result suggests that multiple sclerosis may be often associated with Borrelia infection. ”

“Behcet's disease, Lyme disease, progressive multifocal leukoencephalopathy, neurosarcoidosis, Whipple’s disease, listeria rhombencephalitis, Bickerstaff’s brainstem encephalitis, vasculitis due to systemic lupus erythematosus, and acute disseminated encephalomyelitis produce inflammatory lesions similar to those of MS in the brainstem and cerebellum. “
2001 **Association between multiple sclerosis and cystic structures in cerebrospinal fluid.**

“Therefore, we have both microbiological and some clinical support for the hypothesis that the cystic structures found in the CSF of the MS patients may originate from spirochetes which could be the causative agents of MS.”

2002 **Bacterial infection as a cause of multiple sclerosis.**

“Infection with *Borrelia burgdorferi*, the spirochaete responsible for Lyme disease, can involve the central nervous system and the later stages of the disease may mimic the clinical symptoms of multiple sclerosis.”

2004 **Isolated monolateral neurosensory hearing loss as a rare sign of neuroborreliosis.**

“Encephalopathy with white matter lesions revealed by magnetic resonance imaging (MRI) scans in late, persistent stages of Lyme disease has been described. In this report, we describe a patient with few clinical manifestations involving exclusively the eighth cranial nerve, monolaterally and diffuse bilateral alterations of the white matter, particularly in the subcortical periventricular regions at cerebral MRI.”

2005 **Chronic Lyme borreliosis at the root of multiple sclerosis - is a cure with antibiotics attainable?**

“As minocycline, tinidazole and hydroxychloroquine are reportedly capable of destroying both the spirochaetal and cystic L-form of *B. burgdorferi* found in MS brains, there emerges also new hope for those already afflicted.”

2007 **Lyme borreliosis and multiple sclerosis are associated with primary effusion lymphoma.**

“In the late period of Lyme disease demyelinating involvement of central nervous system can develop and MS can be erroneously diagnosed.”
Controversies implying Optic Neuritis

Difficult diagnosis

**Recurrent Optic Neuritis:**

- In a population of patients from New England, optic neuritis reappeared in 33% (33/101) of the patients with an optic neuritis unilateral monosymptomatic (36% females, 25% males) in one eye or the other, during a follow-up period of 8 years.
- With 81 patients randomized with a first stroke of monosymptomatic acute optic neuritis, the incidence of recurrent strokes was significantly higher with the Simptom Uhthoff patients (18 din 40 sau 47.5%) than with the patients without Simptom Uhthoff (4 out of 41 or 10%).
- The increased incidence of recurrent optic neuritis with Simptom Uhthoff patients represents a prognostic value and it is in accordance with other the published data. The 18 patients ONTT (13%) in the group on MP IV followed by oral prednison, 39 (30%) in the group on oral prednison and 20 (16%) in the group on placebo had at least one more seizure episode of optic neuritis at any of their eyes within the 6-24 months of follow-up. The analysis of the span of time to the new episode of optic neuritis at one eye demonstrated that the ratio of new episodes was significantly increased in the group on oral prednison (P = 0.02).

This meant a discovery that made the investigators issue a **warning in 1993** as to counter indicating Prednison alone in treating Optic Neuritis.
Controversies implying Optic Neuritis

Optic Neuritis Conversion into Multiple Sclerosis

- There is a great probability for an individual diagnosed with optic neuritis to develop MS. Almost half of the patients will make the conversion to MS in the following 15 years after having been diagnosed with optic neuritis.

- The percentage of developing MS was similar within all the treatment groups (MP i.v + oral prednison, prednison, placebo) after 3 years of follow-up irrespective of the treatment.

- Brain MRI ensures now the means of establishing the risk of conversion to clinical MS. In abnormal MRI scans, in ONTT, there were multifocal lesions of white matter in 46.9% of the patients and MRI proved a strong predictor for MS. The patients of the group with two or more periventricular lesions of white matter, measuring at least 3mm in size had a chance of 36% to develop MS after two years; the patients with only one abnormality had 17% chances to conversion in MS; those presenting no abnormality had only a chance of 3%.

- MP i.v., followed by oral prednison had the greatest impact on deaying the early development of MS in the patients whose MRI showed the most lesions.

*Optic neuritis. Shirley H. Wray. (2005)*
Difficulties in diagnosing Optic Neuritis

“If you are diagnosed with MS, you want to make sure that the diagnosis is correct”, states Dr. Jack Burks, Professor Clinic of Neurology at the Faculty of Medicine of the Nevada University and senior editor of the book on Multiple Sclerosis: *Diagnosis, Medical Management and Rehabilitation.* „Of course, other diseases may seem as being MS, but the treatment is not the same.”

Getting familiar with MS mimics and the way they compare to it may ease the diagnosing process. It is a diagnosis by elimination – the only way of diagnosing MS. Consequently, the more we know about the MS mimics, the sooner we can eliminate the false possibilities. Nowadays, the sooner the MS diagnosis is confirmed, the better.

**AUTOIMMUNE DISEASES MIMICKING MS**

- Acute Disseminated Encephalomyelitis (ADEM)
- Systemic Lupus Erythematosus (SLE),
- Sjögren Syndrome
- Miastenia Gravis (MG)
- Sarcoidosis

**INFECTIOUS DISEASES MIMICKING MS**

- Lyme Disease (Borreliosis)
- Human T- Lymphotropic Virus (HTLV-1)
- Neurosyphilis

**VASCULAR DISEASES MIMICKING MS**

Strokes, CNS Angeitis, Artery.venous dural fistula, Binswanger

*Chris Ratliff, Multiple Sclerosis: Diagnosis, Medical Management and Rehabilitation, 2009*
Lyme Disease is sometimes misdiagnosed as multiple sclerosis, rheumatoid arthritis, fibromyalgia, chronic fatigue syndrome (CFS), or other diseases (mainly autoimmune and neurological), which leaves the infection untreated and allows it to further penetrate the body.

Many of these conditions may be misdiagnosed as Lyme disease, because of the false positive Lyme serology.

Nevertheless there must be noticed that the chronic fatigue syndrome (CFS) is by definition a diagnosis of exclusion, which means it will be improper to say that a patient has not got Lyme because he or she has got CFS. The significant overlapping of symptomatology between Lyme and CFS makes it a crucial matter.

Although there is no doubt that the Lyme disease exists, there are considerable controversies as to the prevalence of the disease, a proper diagnosing and treatment procedure and the possibility of a chronic Lyme infection, resistant to antibiotics.
Virchow’s triad, classical factors enhancing the venous clot in infection:

- endothelial dysfunction
- haemodynamic changes
- hypercoaguability

**Antiphospholipid Syndrome**
(APS or APLS) or

**Antiphospholipid Antibodies Syndrome**

is a coagulation disorder leading to clotting (thrombosis) both in arteries and in veins. The syndrome appears due to an **autoimmune** production of antibodies against phospholipid (aPL), a substance in the **cell membrane.**
In Lyme disease TREATMENT targets:

**CAUSE** \(\rightarrow\) Infection (ANTIBIOTICS)

**EFFECT** \(\rightarrow\) Hyperviscosity of blood (SULODEXIDE)

Effect: **BLOOD HYPERVISCOSITY**
Instead of conclusion ...