Fungus and Multiple Sclerosis

Fungal infection in cerebrospinal fluid from some patients with multiple sclerosis


“... fungal infection can be demonstrated in CSF from some MS patients. This may constitute a risk factor in this disease and could also help in understanding the pathogenesis of MS.”

Fungal infection in a patient with multiple sclerosis


“Antibodies against Candida spp. as well as C. famata-related antigens were also detected in cerebrospinal fluid (CSF). Our findings provide support for the notion that disseminated mycosis is present in this patient.”

Fungal toxins and multiple sclerosis: a compelling connection


“... a surprisingly coherent relationship can be made between multiple sclerosis and fungal toxins. Specifically, certain pathogenic fungi sequester in non-neuronal tissue and release toxins that target and destroy CNS astrocytes and oligodendrocytes. Without these glial support cells, myelin degrades triggering the onset of multiple sclerosis and its associated symptoms. We propose here that fungal toxins are the underlying cause of multiple sclerosis and thus may offer an avenue towards an effective cure.”

Association between multiple sclerosis and Candida species: evidence from a case-control study


“In this case-control study we found a significant association between elevated antibodies of four species of Candida and MS. ... In summary, the results of this single study suggest that Candida species infection may be associated with increased odds of MS.”
Fungal Infection in Patients with Multiple Sclerosis

Open Mycology Journal 2008, 2, 22-28

“Our results provide evidence that in all seven patients studied there are signs of fungal infection. Thus, some of these patients exhibit high antibody titers against several Candida spp.”

“In addition, quantitative PCR indicates that six out of seven patients contain fungal DNA in blood. Four contain significant amounts of β-1,3 glucan in serum, while the presence of fungal antigens was evident in practically all of them, though to different extents. Yeast antibody and antigen analyses reveal the presence of both in cerebrospinal fluid.”

Could Multiple Sclerosis Begin in the Gut?

Scientific American. October 2014

“MS researchers are focusing on the content of the gut’s microbiome as a possible contributor to the body’s autoimmune attack on its nervous system.”

“... 10 academic researcher centers across the U.S. and Canada, reported significantly altered gut flora in pediatric MS patients.”

Multiple Sclerosis – Functional Approaches


“On our study 100% of MS patients demonstrated an abnormally high Dysbiosis Index.”
- Frequent association of Candidiasis and MS
- Elevated anti-Candida antibodies in 70% of MS patients tested
- Shows the evidence supporting the relationship between gut abnormalities and brain pathology.

Antifungal Medication helps MS

TECFIDERA™ or dimethyl fumarate is an oral medication for the treatment of adults with relapsing-remitting MS. It has been shown to reduce MS relapses by 53%, significantly reduce MRI detection of brain lesions by 85-90%, and slow disability progression by 38%.

Dimethyl Fumarate is an antifungal, a fungicide – it kills or inhibits fungi or fungal spores. It prevents growth of mold during storage or transport of furniture and shoes in a humid climate.
**Statin Drug Helps MS**

*Effect of high-dose simvastatin on brain atrophy and disability in secondary progressive multiple sclerosis (MS-STAT): a randomised, placebo-controlled, phase 2 trial*

The Lancet, Volume 383, Issue 9936,

High-dose simvastatin reduced the annualised rate of whole-brain atrophy compared with placebo, and was well tolerated and safe. These results support the advancement of this treatment to phase 3 testing.

**Statin Drugs are Antifungal**

*Growth inhibition of Candida species and Aspergillus fumigatus by statins*

FEMS Microbiology Newsletter 262 (2006) 9–13

We studied the effects of two major statins, simvastatin and atorvastatin, on five Candida species and Aspergillus fumigatus. The statins strongly inhibited the growth of all species, except Candida krusei.

**Statins as Antifungal Agents**


“Statins were originally used as cholesterol lowering agents in human therapy, but recent studies demonstrated their in vitro antifungal activity against yeasts and filamentous fungi.”