

ARE CHLAMYDOPHILA INFECTIONS A MAJOR FACTOR IN NEUROLOGIC AND PSYCHIATRIC DISEASES? - NO

Tobias Derfuss

Department of Neurology, University Hospital, Basel, Switzerland

Chlamydia pneumoniae is an obligate intracellular bacterium that infects alveolar macrophages, monocytes and endothelial cells. Serology indicates that about half of the populations in developed countries have had contact to *C. pneumoniae*. Chlamydia bacteria have been linked to a chronic encephalopathy in cows, which is called sporadic bovine encephalomyelitis. If *C. pneumoniae* were linked to the pathogenesis of certain subtypes of multiple sclerosis, this would have striking therapeutic consequences.

In the late 90ies Sriram and colleagues reported on a multiple sclerosis patient who failed to respond to immunosuppressive treatment, but had *C.pneumoniae* in the CSF and improved dramatically after antibiotic treatment. In a larger cross-sectional study, the same group reported that *C. pneumoniae* could be cultured from 64 % of multiple sclerosis patients versus 11 % of controls and polymerase chain reaction (PCR) allowed the detection of *C. pneumoniae* genome in 97 % of multiple sclerosis patients versus 18 % of OND controls. The same group also reported that oligoclonal bands from the CSF of MS patients recognize Chlamydia antigen. This group also claimed that Chlamydia antigen can be detected in brains of MS patients. In the animal model of MS an infection with *C. pneumoniae* led to a worsening of the disease. Immunization with a peptide from *C. pneumoniae*, that showed similarity to myelin basic protein (MBP), was able to induce clinical disease in EAE. Molecular mimicry and unspecific activation of the immune system via TLRs were speculated as possible pathomechanisms.

A series of follow-up studies, however, could not confirm these results. Two studies could not detect any *C. pneumoniae* DNA in CSF of MS patients. Another study detected *C.pneumoniae* by PCR in the CSF in 5/10 patients and then in a second series in 2/20 patients by PCR. Yet another study detected *C.pneumoniae* by PCR in 2/8 multiple sclerosis patients and found intrathecal IgG production in 8/22 multiple sclerosis patients (36%) (no data about control patients were reported) and initiated a placebo-controlled multicenter study to evaluate the efficiency of an antibiotic treatment with Roxithromycin. This study could not show any benefit with regard to relapse frequency or disability progression as measured by EDSS. Another group detected *C.pneumoniae* in a high percentage of the CSF of both multiple sclerosis-patients and controls. Our group did not find reproducible evidence for the presence of *C.pneumoniae* genome in any of the studied 23 CSF samples. Others looked at the presence of *C.pneumoniae* in multiple sclerosis-brains. *C.pneumoniae* was not detected by PCR in any of the analysed patient and control specimens.

The number of patients studied in all of these reports was small, and data were mainly based on PCR analysis. However, the PCR detection of *C.pneumoniae* in the CSF is not standardized and the contradictory results might be explained by different PCR protocols, different strategies to extract DNA, different handling of the CSF/tissue, amount of CSF drawn, cell number in the CSF, activity of the MS lesion, and other variations. In a different set of experiments we could also not confirm that the oligoclonal bands of MS patients were directed against *C.pneumoniae*. All these data strongly argue against a pathogenic role of *C.pneumoniae* in MS. Consequently, there is no need for testing of MS patients for *C.pneumoniae* and there is no rationale for antibiotic treatment.