

# Research on venous abnormalities must continue, say neurologists

February 7 2014, by Ellen Goldbaum

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University at Buffalo researchers who authored one of neurology's most cited papers in the last three years are calling for more investigation into how venous abnormalities in the neck might be involved in central nervous system disorders and aging.

The call for additional research was expressed in a December editorial and debate article in *BMC Medicine*, co-authored by Robert Zivadinov, MD, PhD, professor of neurology in the UB School of Medicine and Biomedical Sciences and director of the neurology department's Buffalo Neuroimaging Analysis Center.

Zivadinov and his colleagues published a paper on the prevalence of these abnormalities in multiple sclerosis (MS) patients in 2011. The paper is one of the top ten articles in neurology and the second most cited paper in neurology since its publication, according to Neuroopenews, the news blog of the European Federation of Neurological Societies and the European Neurological Society.

"Interest in these venous abnormalities is reflected by the large number of citations of the 2011 paper, but the full story and consequence of these abnormalities will require much more research," comments Zivadinov. "To that end, we are calling for additional research into understanding the role of the extracranial venous system in relation to a broad range of central [nervous system disorders](#) and aging."

In their December 2013 article, "Potential involvement of the

extracranial venous system in central [nervous system](#) disorders and aging," Zivadinov and his co-author Chih-Ping Chung, of Taipei Veterans General Hospital, discuss the history of these venous abnormalities, noting that since no causal relationship was found with MS, there have been some calls to abandon related research.

But Zivadinov and Chung note that given the mounting evidence that vascular factors may play a role in a range of central nervous system disorders, more research on extracranial venous abnormalities is essential. In particular, they call for research that can examine the incidence and prevalence of these venous abnormalities in relation to developmental and demographic factors, as well as cardiovascular, inflammatory and [lifestyle risk factors](#).

Extracranial venous abnormalities, indicative of chronic cerebrospinal venous insufficiency (CCSVI), were described initially by Paolo Zamboni, MD, from Italy's University of Ferrara. The condition is characterized by the narrowing of vessels draining blood from the cranium. Zamboni had hypothesized that this narrowing restricts the normal outflow of blood from the brain, resulting in alterations in the blood flow patterns within the brain that eventually cause injury to brain tissue and degeneration of neurons, leading or contributing to MS.

The July 2011 paper co-authored by Zivadinov, "Prevalence, sensitivity, and specificity of chronic cerebrospinal venous insufficiency in MS," was published in *Neurology*. It described a UB research study designed to determine the prevalence of CCSVI in a large cohort of patients with multiple sclerosis, clinically isolated syndrome or other neurologic diseases as well as healthy controls.

In that study, the UB researchers found an increased prevalence of CCSVI in MS, but it was substantially lower than the sensitivity and specificity rates in MS that the Italian investigators originally reported.

"We began with a major investigation into extracranial venous abnormalities with relation to MS patients and have now developed a substantial body of work looking at them in relation to Alzheimer's disease, aging and other neurological diseases," says Zivadinov. "The work has been of critical interest to the scientific community. We believe that our current studies on how these [abnormalities](#) impact central nervous system pathology will also prove to be of ongoing interest."

**More information:** "Prevalence, sensitivity, and specificity of chronic cerebrospinal venous insufficiency in MS." Zivadinov R, Marr K, Cutter G, Ramanathan M, Benedict RH, Kennedy C, Elfadil M, Yeh AE, Reuther J, Brooks C, Hunt K, Andrews M, Carl E, Dwyer MG, Hojnacki D, Weinstock-Guttman B. *Neurology*. 2011 Jul 12;77(2):138-44. [DOI: 10.1212/WNL.0b013e318212a901](#). Epub 2011 Apr 13.

Provided by University at Buffalo

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