



Title: Chronic Cerebrospinal Venous Insufficiency in relation to Multiple Sclerosis

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The Ottawa Hospital
Ottawa, Ontario
Timing: 7/1/10-6/30/12
Amount: C\$102,866 over 2 years

- A series of recent publications have suggested that some people with MS have obstructions in the veins that drain blood from the brain and spinal cord, and this may contribute to iron deposition and nervous system damage in MS.
- Dr. Carlos Torres is leading a team employing powerful MRI and Doppler ultrasound technology to explore vein anatomy and look for iron deposits in the brains of 50 people who have MS and 50 age-matched healthy volunteers.
- This study works towards mapping out normal variations in vein anatomy of the neck and providing insight into CCSVI in MS.

About the Investigator: Dr. Carlos Torres is a neuroradiologist at The Ottawa Hospital and an Assistant Professor of Radiology at The University of Ottawa. He is a clinical researcher with a particular interest in MS and other myelin-damaging diseases and has significant experience in MRI, Doppler ultrasound and computed tomography. He earned his MD at the University Javeriana in Colombia, South America, and did a residency in radiology there before becoming an Assistant Professor. He then went to McGill University Health Centre for a fellowship in Neuroradiology, where he earned the “Fellow Teacher of the Year” Award. He has been at the The Ottawa Hospital and University of Ottawa since 2008, and is now also the Director of the Neuroradiology Fellowship Training Program. Dr. Torres has assembled a top-notch team to address this project, including MS clinical research experts, physicists with a deep understanding of MR physics and imaging, clinical researchers with expertise in vascular (blood vessel) pathology and neurointerventional radiologists.

Details: This team is employing “3 Tesla” MRI technology that is twice as powerful as a standard MRI magnet to explore differences in the anatomy of veins in the neck, chest and spine and to assess for iron deposits in the brain. They are comparing findings in 50 people who have MS with those in 50 age-matched healthy volunteers. They are also using Doppler ultrasound techniques that were used by originators of the CCSVI hypothesis, and seeking verification that there is a relationship between blocked veins and areas of iron deposition in the brain by measuring levels of iron in the brain in those with and without vein blockages. The questions the team is focused on include: How frequent are the vein blockages and abnormalities in people who do not have MS? How frequently do they occur in people with MS? Can the team detect brain iron pooling in patients with blocked veins?

These studies should lead to a better understanding of normal variations in the anatomy of the veins that drain the brain, and the potential role of venous insufficiency in MS.

Recruitment: A total of 100 participants including participants with MS and healthy individuals. Participants will be recruited through The Ottawa Hospital MS Clinic Research Unit. Recruitment number is approximate and is subject to change.

Additional Personnel (all are affiliated with The Ottawa Hospital, the Ottawa Hospital Research Institute and the University of Ottawa):

- Dr. Ian G. Cameron, Department of Diagnostic Imaging (MRI Unit)
- Dr. Matthew J. Hogan, Division of Neurology
- Dr. Mark E. Schweitzer, Department of Radiological Sciences and Department of Diagnostic Imaging
- Dr. Cheemun Lum, Department of Diagnostic Imaging
- Dr. Miguel E. Bussière, Division of Neurology
- Dr. Santanu Chakraborty, Department of Diagnostic Imaging
- Dr. Mark S. Freedman, Division of Neurology (MS Research Unit)

Quotes – Dr. Carlos Torres:

- “Before undertaking large expensive studies to examine the benefits of treatment of these blockages, several important questions must be answered: Do these blockages occur in patients that do not have MS? Do they occur in all patients with MS? Can we detect brain iron pooling in patients with blocked veins? We hope to answer these questions.”
- “Results of this study will definitively confirm whether venous obstructions are clearly associated with MS or are a normal phenomenon. In addition, it will indicate whether excess iron deposition in the brain correlates with the presence of associated venous obstruction. Only with such results could a treatment trial aimed at relieving obstructions be considered.”