



Title: Cerebral Venous Hemodynamics in Pediatric Multiple Sclerosis

Brenda Banwell, MD

The Hospital for Sick Children

Toronto, ON.

Timing: 7/1/10/-6/30/12

Amount: C\$196,579.14 for 2 years

- A series of recent publications have suggested that some people with MS have obstructions in the veins that drain blood in the brain and spinal cord that may contribute to nervous system damage in MS.
- Dr. Banwell, a noted expert in pediatric MS, has assembled a team to study CCSVI in pediatric MS patients – a population where the disease process is at a very early stage, and where advanced age and other health conditions that might affect blood flow do not exist.
- Determining whether the veins are abnormal very early in the MS process in pediatric MS will add additional depth to studies of CCSVI in adult MS.

About the Investigator: Dr. Brenda Banwell is the Director of the Pediatric MS Clinic at The Hospital for Sick Children (SickKids) in Toronto. She earned her medical degree from the University of Western Ontario and completed a residency in pediatrics at the Children's Hospital of Western Ontario, a residency in pediatric neurology at SickKids, and a neuromuscular disease fellowship at the Mayo Clinic, Rochester, Minnesota. Dr. Banwell is the principal investigator of a Canada-wide study of acute demyelination in Canadian children (funded by the MS Scientific Research Foundation). She also serves as the Research Chair of the International Pediatric MS Study Group.

Dr. Banwell has assembled a team that includes – among others – an imaging scientist who is leading a program to evaluate blood flow in children, pediatric neuroradiologists with extensive expertise in cerebrovascular imaging in children, a world-renowned neuroimaging expert in the field of MS, and a pediatric neurologist with experience in venous malfunction in children.

Project Details: Recent preliminary studies have suggested that a phenomenon called Chronic Cerebrospinal Venous Insufficiency (CCSVI), a reported abnormality in blood drainage from the brain and spinal cord, may contribute to nervous system damage in MS. This hypothesis has been put forth by Dr. Paolo Zamboni from the University of Ferrara in Italy. This pilot study warrants subsequent larger and better controlled studies to definitively evaluate the possible impact of CCSVI on the disease process in MS.

Dr. Banwell, a noted expert in pediatric MS, has assembled a team to study CCSVI in pediatric MS patients – a population where the disease process is at a very early stage, and where advanced age and other health conditions that might affect blood flow do not exist. They are determining whether CCSVI occurs in children with MS using non-invasive MRI measures of vein anatomy and novel measures of venous flow and are comparing the results to children without MS. The team also is using “hemodynamic” (blood flow) tests to investigate a hypothesis that might explain how blood flow problems could lead to myelin damage, through the accumulation of excess iron.

Determining whether the veins and vein flow are abnormal very early in the MS process in pediatric MS will add additional depth to studies of CCSVI in adult MS.

Recruitment: A total of 60 participants that includes healthy children and adolescents and pediatric MS participants. Participants with MS will be within 5 years of their first MS attack and recruited from the Pediatric MS Clinic at SickKids. Recruitment number is approximate and is subject to change.

Additional Personnel:

- Dr. Christopher Macgowan, SickKids and University of Toronto
- Dr. Suzanne Laughlin, SickKids and University of Toronto
- Dr. Manohar Shroff, SickKids and University of Toronto
- Dr. John Sled, SickKids and University of Toronto
- Dr. Rae Yeung, SickKids and University of Toronto
- Dr. Susanne Benseler, SickKids and University of Toronto
- Dr. Jeffrey Traubici, SickKids and University of Toronto
- Dr. Mahendranath Moharir, SickKids
- Dr. Douglas Arnold, Montreal Neurological Institute, McGill University
- Dr. Sridar Narayanan, Montreal Neurological Institute, McGill University
- Dr. Amit Bar-Or, Montreal Neurological Institute, McGill University
- Dr. Ruth Ann Marrie, MS Clinic director, University of Manitoba

Quotes – Dr. Brenda Banwell

- “For children and adolescents living with MS, this study provides a unique opportunity for participation in cutting edge research with therapeutic potential - access that is typically denied to young patients.”
- “We will study pediatric MS patients to determine whether the venous system is abnormal in a population where the disease process is at a very early stage and without the confounding effects of advanced age and co-existing health conditions.”