

Otterbein University

Digital Commons @ Otterbein

Nursing Student Class Projects (Formerly MSN)

Student Research & Creative Work

Fall 2014

Cerebral Venous Sinus Thrombosis (CVST)

Meghan N. DeLong

Otterbein University, meghan.delong@otterbein.edu

Follow this and additional works at: https://digitalcommons.otterbein.edu/stu_msn



Part of the [Cardiovascular Diseases Commons](#), [Medical Pathology Commons](#), and the [Nursing Commons](#)

Recommended Citation

DeLong, Meghan N., "Cerebral Venous Sinus Thrombosis (CVST)" (2014). *Nursing Student Class Projects (Formerly MSN)*. 41.

https://digitalcommons.otterbein.edu/stu_msn/41

This Project is brought to you for free and open access by the Student Research & Creative Work at Digital Commons @ Otterbein. It has been accepted for inclusion in Nursing Student Class Projects (Formerly MSN) by an authorized administrator of Digital Commons @ Otterbein. For more information, please contact digitalcommons07@otterbein.edu.

Cerebral Venous Sinus Thrombosis (CVST)



THE OHIO STATE
UNIVERSITY
WEXNER MEDICAL CENTER

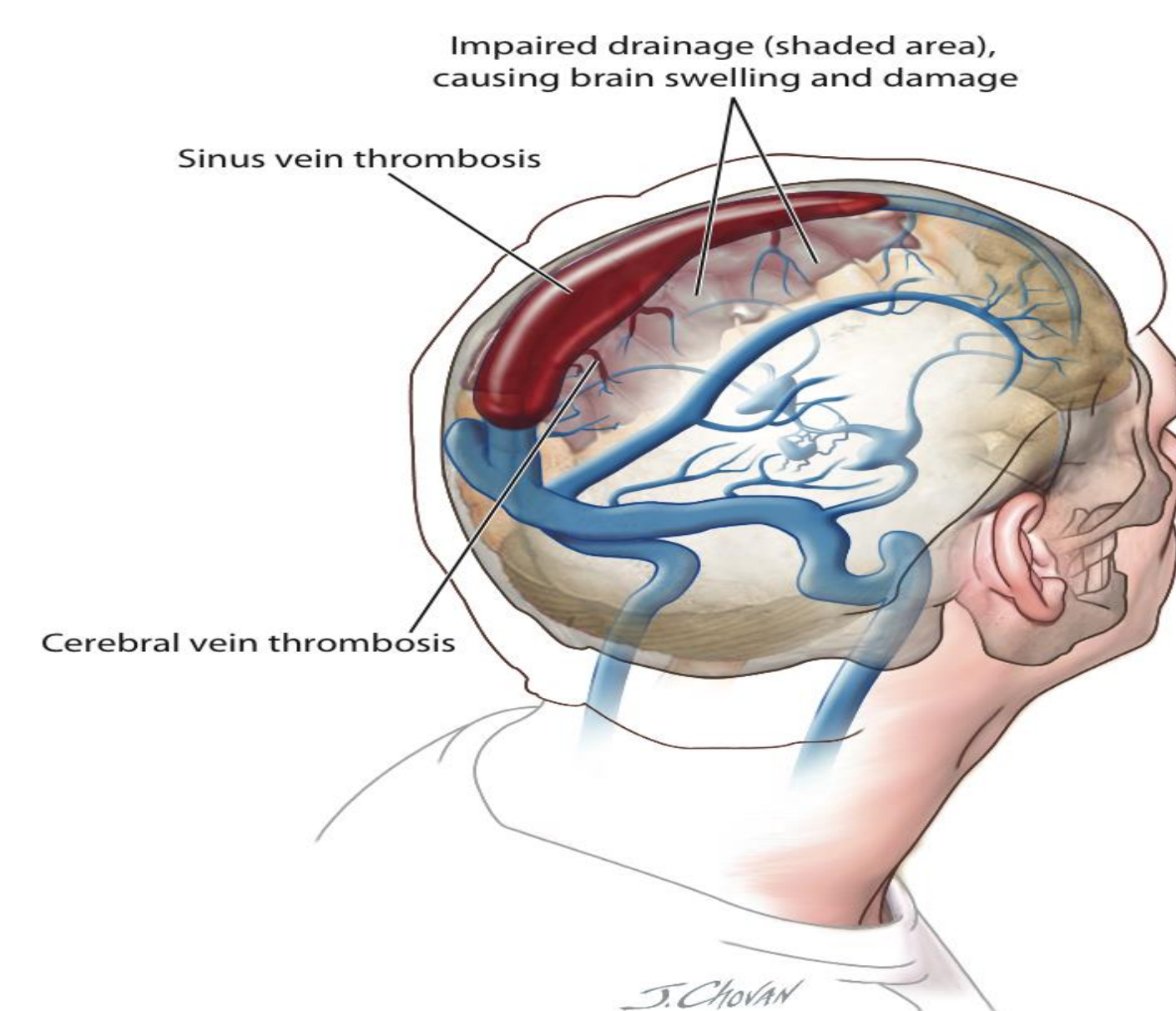
Meghan N. DeLong, MSN/Ed., RN, CMSRN
Otterbein University

Introduction

Cerebral venous sinus thrombosis (CVST) is an uncommon condition with incidence resulting in approximately 1-3 % of all strokes. Cerebral venous sinus thrombosis remains often unrecognized initially due to its vague manifestations of symptoms which range from isolated headaches to focal neurological signs and symptoms. CVST is slightly more common in women, particularly in the age group of 20 to 35, due to pregnancy, puerperium and oral contraceptive use (Stam, 2005).

Presentation of Case

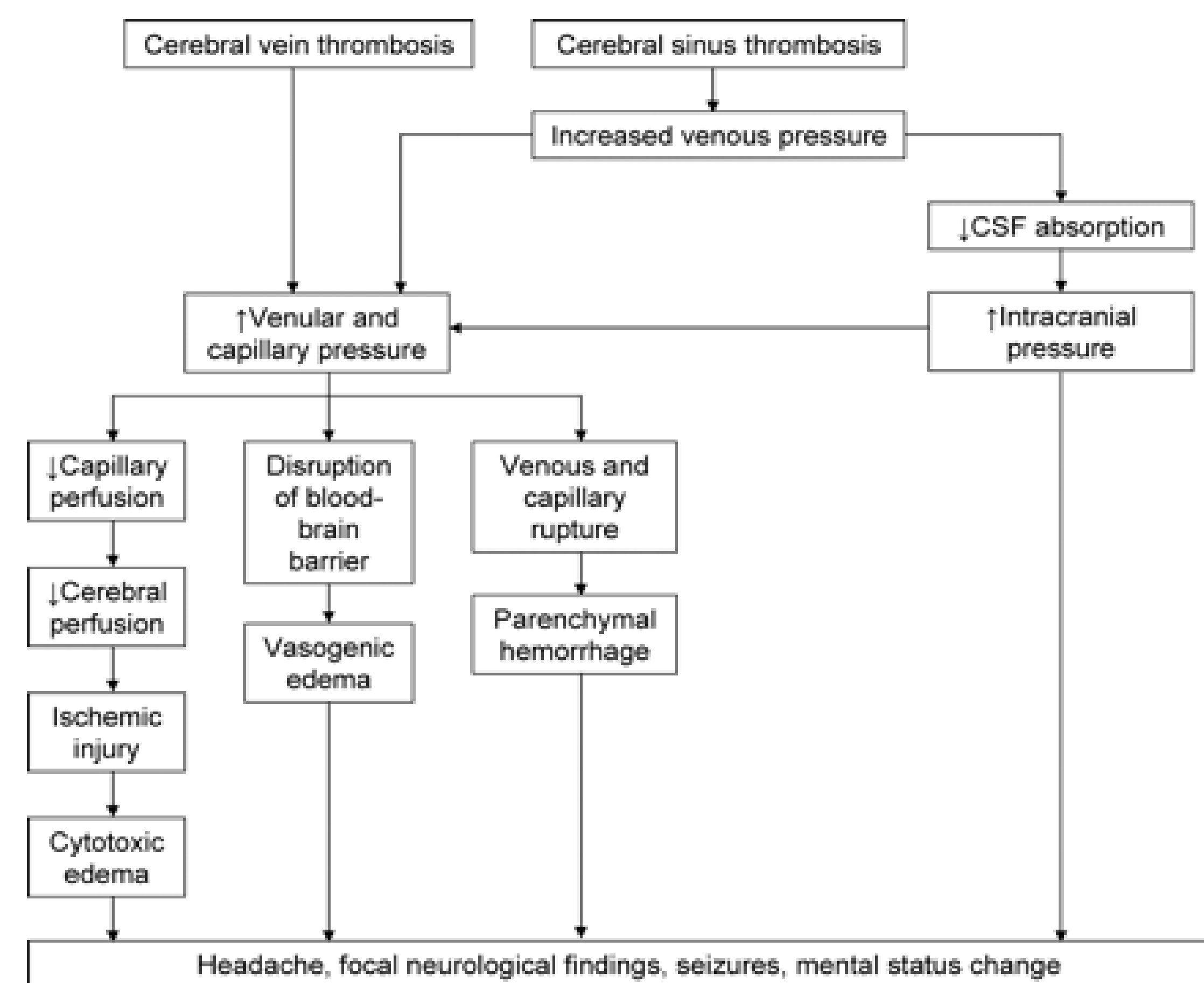
27 year old female (M.W.) admitted with persistent headache localized in the occipital region. M.W. presented with acute onset of severe bilateral vision changes and minor extremity weakness, initially noted on the right side. Vital signs stable. Patient alert and oriented to; place, time, and situation. M.W. reports laparoscopic colectomy one month prior to admission. M.W. has had two children without complications and is currently using oral contraceptives as her method of birth control. M.W. became drowsy. Neurological exam showed; strength in right upper extremity 2/5, strength in right lower extremity 2/5, strength in left upper extremity 4/5, and strength in left lower extremity 3/5. Brisk deep tendon reflexes were noted in all four extremities with increase in muscle tone. Visual acuity was diminished bilaterally, patient was unable to recognize shapes at twelve inches from face. Bilateral pupillary reflex was intact and no restriction of extraocular movement was noted. Bilateral disc edema present. CT of the brain showed well-defined hypodense area in bilateral parieto-occipital border. Cortical sulci were reported "effaced" suggestive of edema. Magnetic resonance imaging (MRI) illustrated areas of hypersensitivity in the corticomedullary junction. The following sinuses were not visualized; straight, left transverse, sigmoid, left jugular vein, and left jugular bulb. A D-dimer assay test was completed which was significantly elevated at 1615 ng/mL. Testing along with M.W.'s clinical presentation at this time were consistent with the diagnosis of CVST, more specifically, syndrome of isolated intracranial hypertension.



(Moll, 2013)

Pathophysiology

- According to The National Institute of Health, the main cerebral venous sinuses affected by CVST are the superior sagittal sinus (72%) and the lateral sinuses (70%) CVST is a continual process in which the balance of prothrombotic and thrombolytic processes is disturbed, leading to progression of the venous thrombus with time.
- Slow growth of the thrombus and the well vascularized collateralization of the venous vessels explain the usually gradual onset of symptoms, often developing over weeks and months (Stam, 2005).
- If left untreated and the clot enlarges, it causes venous congestion and leads to cerebral edema with result in increased intracranial pressure. Over time the intracranial pressure will then continue to rise and the vascular supply becomes severely compromised, leading to ischemia.
- This snowball effect contributes to worsening of neurological status. Complete obstruction of the venous system can occur causing worsening of cerebral edema, leading to vascular compression, and eventually brain herniation, which would subsequently lead to death (Buccino et al., 2003).



(Stam, 2005)

Nursing Implications

- Heparin via IV would be the first drug of choice, this drug has been shown to be the most effective treatment modality (Buccino et al., 2001; Buccino et al., 2003; Ekseth et al.; Soleau et al., 2003).
- Once level of conscious returned to baseline, transition to oral anticoagulants (Coumadin), with a goal INR to be kept between 2-3 and discharge on oral Coumadin with regular lab follow up for three months. Educate patient on bleeding precautions, potential food interactions and importance of careful monitoring of international normalized ratio (INR) while on the Coumadin.

- While in the acute care setting, encourage and assist with ambulation, monitor vitals, complete neurological exam, visual acuity testing, speech and swallow evaluation preformed prior to eating. Draw coagulation panel and titrate Heparin drip per sliding scale. Place patient on seizure precautions due to increased intracranial precautions.
- Monitor labs, clinical manifestations, assess for signs and symptoms of deep vein thrombosis and worsening of current condition. Due to M.W.'s risk factor of oral contraceptive usage, M.W. was counseled on alternative methods of birth control prior to discharge.

Conclusion

Cerebral venous sinus thrombosis remains often unrecognized at initial presentation. Increased awareness and recognition at early onset accompanied with high reliability non-invasive testing such as CT scans and MRI's are vital in the treatment of patients suffering from CVST. Awareness and recognition at early onset accompanied with high reliability non-invasive testing such as CT scans and MRI's are vital in the treatment of patients suffering from CVST. Treatment at early onset has been proven successful with rehydration and intravenous anticoagulants. Like any disease processes, potential complications grow with severity and location of the patient. Patient as well as familial education is important for stroke patients of any kind. Understanding of both modifiable and non-modifiable risk factors are imperative for treatment and prevention of additional clotting secondary effects (Baker et al., 2001; Buccino et al., 2001; Chow et al., 2000).

References

- Baker, M. D., Opatowsky, M. J., Wilson, J. A., Glazier, S. S., & Morris, P. P. (2001). Rheolytic catheter thrombolysis of dural venous sinus thrombosis: A case series. *Neurosurgery*, 48(3), 487–494.
- Benamer, H. T. S., & Bone, I. (2000). Cerebral venous thrombosis: Anticoagulation or thrombolytic therapy? *Journal of Neurology, Neurosurgery & Psychiatry*, 69(4), 427–430.
- Buccino, G., Scoditti, U., Patteri, I., Bertolino, C., & Mancina, D. (2003). Neurological and cognitive long-term outcome in patients with cerebral venous sinus thrombosis. *Acta Neurologica Scandinavica*, 107(5), 330–335.
- Buccino, G., Scoditti, U., Pini, M., Menozzi, R., Piazza, P., Zuccoli, P., et al. (2000). Loco-regional thrombolysis in the treatment of cerebral venous and sinus thrombosis: Report of two cases. *Acta Neurologica Scandinavica*, 103(1), 59–63.
- Chaloupka, J. C., Mangla, S., & Huddlem, D. C. (1999). Use of mechanical thrombolysis via microballoon percutaneous transluminal angioplasty for the treatment of acute dural sinus thrombosis: Case presentation and technical report. *Neurosurgery*, 45(3), 650–656.
- Chow, K., Gobin, Y. P., Saver, J., Kidwell, C., Dong, P., & Vinuela, F. (2000). Endovascular treatment of dural-sinus thrombosis with rheolytic thrombectomy and intra-arterial thrombolysis. *Stroke*, 31(6), 1420–1425.
- Ekseth, K., Bostrum, S., & Vegfors, M. (1998). Reversibility of severe sagittal sinus thrombosis with open surgical thrombectomy combined with local infusion of tissue plasminogen activator: Technical case report. *Neurosurgery*, 43(3), 60–964.
- Healthy People 2020 Heart Disease and Stroke. (2014, August 22). Retrieved September 11, 2014, <http://www.healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicid=21>
- Moll, S. (2013, January 1). Sinus and Cerebral Venous Thrombosis. Retrieved October 30, 2014, from <http://patientblog clotconnect.org/2011/02/07/sinus-and-cerebral-vein-thrombosis/>
- NINDS Stroke Information Page. (n.d.). Retrieved September 13, 2104, from <http://www.ninds.nih.gov/disorders/stroke/stroke.htm>
- Soleau, S. W., Schmidt, R., Stevens, S., Osborn, A., & MacDonald, J. D. (2003). Extensive experience with dural sinus thrombosis. *Neurosurgery*, 52(3), 534–544.
- Stam, J. (2005). Thrombosis of the Cerebral Veins and Sinuses. *The New England Journal of Medicine*, 352(17), 1792-1798. Retrieved October 8, 2014, from Ebscohost.