**Recovery from a subarachnoid hemorrhage:**

*A first-person account*

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**INTRODUCTION**

This presentation focuses on what patients, caregivers, and family members may experience when a neurological trauma occurs.

**BACKGROUND and INITIAL TRAUMA**

- Alejandro was a healthy 52-year-old male at the time of the SAH who presented no health or neurological issues that are typically associated with a vertebral artery lesion (e.g., motor or sensory symptoms, dysarthria, imbalance, dizziness, tinnitus, paresthesia (tickling or prickling of the skin), homonymous hemianopia (partial blindness), diploria (double vision), cranial nerve palsies, or dysphagia) (Harrigan & Deveikis, 2009).
- However, he exhibited only one symptom associated with a subarachnoid hemorrhage, i.e., continued fluctuating levels of nausea (Josephson, 2010). The nausea was thought to be related to gall bladder dysfunction. While in the hospital awaiting the gall bladder surgery, Alejandro was discovered on the floor in his hospital room, barely breathing and in tachycardia.
- Alejandro was rushed to the intensive care unit (ICU) and stabilized. A CT of the head indicated that he had suffered a subarachnoid hemorrhage bleeding into the cerebrospinal fluid (CSF). Two MRI studies were required to diagnose the exact location of the SAH due to neurological vasospasms.
- The vertebral artery had a fusiform aneurysm that was approximately 8 millimeters (mm) in length with significant narrowing of the artery directly below the aneurysm. Refer to figure 1. The artery ruptured causing blood to enter into the subarachnoid space. Due to the rupture occurring in CSF rather than the brain, Alejandro did not present with significant deficits in cognitive functioning, speech, language, or motor abilities (as reported by the neurosurgeon, primary care physician, and spouse (a certified and state licensed SLP)).

**Figure 1. MRI of Right Vertebral Artery Sub-Arachnoid Hemorrhage**

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**Day 2 post trauma**

- The fusiform dissecting aneurysm was repaired by a Neuroradiologist. Two stents (i.e., 20 and 22 mm in length), one inside of the other, were inserted in the vertebral artery via an incision in the upper leg/groin area.
- The dual stents provided additional reinforcement and support to the artery and aneurysm. In addition to the aneurysm, a 10 mm length of the artery below the rupture was extremely narrow, possibly due to a birth defect. To repair the aneurysm, a coil was inserted into the bulged and ruptured area of the artery.
- Alejandro was also on IV antibiotics prescribed for the inflammation of the meninges and to avoid potential infections. Due to the severe pain and nausea, Alejandro was medicated the majority of the time for the first two weeks in ICU.
- Alejandro’s sodium and potassium levels in the blood were extremely low for two weeks and initially required monitoring every six hours. The decreased sodium is a physiological response to the neurological trauma and blood in the cerebrospinal fluid (Dooling & Winkelman, 2004; Josephson, 2010).

**Day 11 post trauma**

- Alejandro was continually monitored for vasospasms which can cause a stroke after a SAH. On day 11, Alejandro became agitated and was hallucinating, and hearing voices. It was unsure if the cause was vasospasms or ICU psychosis.
- Intensive care unit (ICU) psychosis is experienced by 1 out of 3 patients in the ICU for extended periods of time. Due to sleep deprivation, constant stimulation of lights, noises, checking vital signs (i.e., blood pressure, temperature, pulse, respiratory rate, pain scale, and cognitive orientation), stress on the body, medications, salt wasting (i.e., hyponatremia) often bring about ICU psychosis.
- Differential Diagnosis: To determine if the behaviors were ICU psychosis or due to vasospasms, the neurosurgeon conducted an angiogram. The angiogram indicated moderate vasospasms which continued to occur; however, after sedated sleep the behaviors and symptoms disappeared. Thus, the symptoms appeared to be related to ICU psychosis.

**Day 14-18 post trauma.**

- Alejandro was moved to a neuro-ICU (progressive unit), a step down from the more critical care ICU. Sixteen days after the SAH, Alejandro started physical therapy by walking in the hallway a few feet and was able to go to the restroom with assistance.
- While in the hospital, the neurosurgeon had completed a follow-up angiogram to examine his cerebral arteries and the stents and coil about 10 days after they were inserted. The repaired artery was healing and the aneurysm had reduced in size.

**Day 22 post trauma**

- Alejandro was released from the hospital.
- He experienced some minor anomalies (or word finding difficulties, particularly if famous individuals or low incidence names). He did not have any difficulties with names of family, friends, or colleagues.
- Word retrieval abilities were estimated to be at 95% two months post-trauma. As with spontaneous recovery of individuals with aphasia (Brookshire, 2007), it is estimated that his full mental abilities would return within six months post-trauma (as indicated by my neurosurgeon on a two month follow-up visit).

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**REFERENCES**


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**SIX-MONTH FOLLOW-UP MAGNETIC RESONANCE ANGIOGRAPHY (MRA)**

- A six month follow-up magnetic resonance angiogram indicated normal blood flow, healing, stabilization of the aneurysm, and normal diameter of the right vertebral artery. Monitoring using MRAs on six-month intervals will be conducted.

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**PATIENT PERSPECTIVE**

- Transitions after a significant health issue can be stressful. Leaving the hospital induced fear and anxiety. My thoughts…what if the aneurysm ruptured again?
- While, in the hospital I was continuously asked orientation questions such as my name, birth-date, and location. I was able to perform this task within days of my trauma. Over time I began to recognize my decreased ability to remember and recall (short term memory). Therefore, simple tasks may hide higher order and executive function cognitive disabilities.
- Working memory, particularly word retrieval, and immediate memory have been the cognitive and language feature that have been most impacted from my trauma.

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**CAREGIVER/SPouse PERSPECTIVE**

A call in the middle of the night…Your husband “has taken a turn for the worse” and the doctors had “brought him back” “…come to the hospital immediately!” After the immediate shock of learning the details and severity of my husband’s SAH, I realized the importance of my role of being his patient advocate, medical researcher, and emotional support during this crisis. The following are caregiver suggestions:

- Research all aspects of the medical condition to become knowledgeable so that you can assist in making appropriate medical decisions. Research-based, rather than emotionally-based decisions, are crucial decisions for maximum recovery.
- Designate 1-2 individuals who are close to the patient to continually stay at the hospital, preferably in the patient’s room. Physicians and nurses continually rotate, therefore, having a constant person monitor progress or decline in condition is essential.
- Research all medications prescribed and monitor the patient’s symptoms. Being aware of medication side effects and the patient’s symptoms can provide important ongoing information to medical personnel for appropriate medication decisions.
- Use technology to support the caregiver/patient’s needs. Computers, iPads, cell phones, etc. are essential to managing medical, family, and work related communication during the crisis and recovery stages. Designate someone to assist.
- Build a family and friends support system and accept assistance offered.
- Use of a patient progress reporting website is essential to report the patient’s status. The convenience of being able to enter information real time into a web-based blog allows all family and friends to monitor their loved ones progress. It also provides a way to communicate their well-wishes to the patient and family. An example is CaringBridge, a non-profit organization, located at http://www.caringbridge.org.
- Above all, the caregiver(s) must be aware of their physical and emotional needs and limits. Take particular care to maintain personal nourishment and needed rest.

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**Figure 2. Six Month Follow-Up MRA**

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**Victory**