The most appropriate treatment of cerebral aneurysms, both ruptured and unruptured, is currently under debate. As updated guidelines are yet to be defined, our study attempted to identify the trends in therapy for cerebral aneurysms in the United States. Using data from a nationwide hospital database, we identified recent trends in therapy and outcomes for cerebral aneurysms. To accomplish this task, the database of the Nationwide Inpatient Sample (NIS) from the Healthcare Cost and Utilization Project, Agency for Healthcare Research and Quality was reviewed. The NIS is the largest all-payer inpatient care database in the United States. The data includes 100 percent of discharges from a stratified random sample of nonfederal hospitals in 19 to 28 states. Thus, a representative 20 percent sub-sample of the entire United States is included in these hospital discharges, equating to approximately 8 million hospital stays from 1,000 hospitals. Multiple variables were categorized and subjected to statistical analysis for International Classification of Diseases (ICD)-9-CM codes related to subarachnoid hemorrhage (SAH), unruptured aneurysms, and clipping and endovascular treatment of cerebral aneurysm.

Using this approach, a sample of 506,040 patients was accrued for review. The most important findings are as follows:

- The number of discharges remained constant for patients with SAH but doubled for those with unruptured aneurysms.
- The number of discharges remained constant for aneurysm clippings but doubled for endovascular procedures. By the study’s end, mortality decreased 20 percent for SAH and 50 percent for unruptured aneurysms. (Fig. 1 and 2)
- Increasing age was associated with statistically significant increased mortality, length of hospitalization, and mean hospital charges.
- Endovascular treatment was used more often in older patients.
- Teaching status and larger hospital size were associated with statistically significant better outcomes and lower mortality, especially in patients who underwent aneurysm clipping. These facilities were also associated with higher charges and longer hospital stays (a non-statistically significant finding).
- Endovascular treatment was associated with significantly higher mortality rates in small hospitals and steadily increasing morbidities.
- Surgical morbidity, length of hospitalization, and mean charges were statistically significantly higher for patients who underwent aneurysm clipping.

The most noteworthy conclusions of this study indicate that the introduction of endovascular therapy equates to better overall results in the treatment of patients with cerebral aneurysms.

While this study provides some insight into the ongoing debate of “clip versus coil” in the treatment of cerebral aneurysms, it also gives evidence that there is no definitive answer to this question. It depends on the individual patient - their age, clinical findings, and the type of facility in which they are treated. A multidisciplinary approach at large teaching centers appears to offer the best therapeutic paradigm.
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**RESEARCH CORNER**

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**The Role of Alpha-II Spectrin Breakdown In Brain Aneurysms**

By Dr Stephen B. Lewis, M.D., FRACS, University of Florida

Hemorrhage from a brain aneurysm can be a devastating event with the chance of not surviving the hemorrhage as high as 5 out of 10. Of those who survive the hemorrhage, up to one third require ongoing care, and as many as 8 out of 10, report a reduction in quality of life. Vasospasm (constriction of the brain blood vessels) can complicate recovery from aneurysm hemorrhage and lead to delayed ischemia and stroke. This may occur in up to 46% of patients and is a major cause of poor outcome. Researchers at the University of Florida have been investigating methods of detecting small protein molecules (called biomarkers) in cerebrospinal fluid that may provide early warning of impending neurological decline or stroke from a ruptured aneurysm. Alpha-II spectrin is a protein normally found in the brain. If the brain is suffering an injury (such as stroke or hemorrhage) these proteins are broken down by the body into small molecules and are released into the cerebrospinal fluid (CSF). These breakdown products offer potential markers for determining brain injury severity, early warning of vasospasm, how well vasospasm treatment is working, and the ability to predict outcome from the aneurysm hemorrhage.

Patients treated at Shands Hospital at the University of Florida with aneurysm hemorrhage who needed placement of a ventriculostomy tube to drain CSF were included in the study. Initial status of the patient at time of admission, detection of vasospasm and their outcome at the time of hospital discharge and six month follow-up were recorded. CSF samples were collected every six hours for the duration of the ventriculostomy. The specimens were later tested in the University of Florida Proteomics laboratory using special laboratory techniques (western blot) for the presence of alpha-II spectrin breakdown products. Researchers then compared the spectrin breakdown product levels between patients with good and poor initial presentations, and also between those who did and did not have vasospasm.

Alpha-II spectrin breakdown product levels are found to significantly increase in patients suffering aneurysm hemorrhage. Evidently, the initial rupture of the aneurysm is associated with a brain injury resulting in loss of this protein. The levels of protein measured in the CSF correlated with the initial clinical presentation, meaning, those who arrived at the hospital in poor shape had high levels of this protein. The total amount of protein over the course of the study period (average 10 days) was measured and those with the highest amounts of protein had the poorest outcome, indicating severe ongoing injury to the brain after aneurysm hemorrhage. The most important finding related to early detection of vasospasm was that the alpha-II spectrin breakdown product concentrations were found to increase significantly over baseline levels up to 12 hours before the onset of vasospasm was detected by routine clinical test currently used today. For patients with vasospasm in whom intervention was successful, the protein levels were found to decrease. This finding suggests that with further development, this protein may one day have a role in the early diagnosis of vasospasm and delayed ischemia as well as serve as an indicator of treatment success and outcome after brain aneurysm hemorrhage.

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**Familial Intracranial Aneurysm (FIA) Study**

The Familial Intracranial Aneurysm (FIA) study is a collaborative effort of physicians from throughout the United States, Canada, Australia, and New Zealand to identify genes that may be important in the development of aneurysms in the blood vessels of the brain. The FIA Study is the largest study of the genetics of brain aneurysms in the world (currently more than 540 families). The study has made tremendous contributions to our understanding of why and in whom brain aneurysms form. This study of affected families is sponsored by the National Institutes of Health.

To be eligible to participate in this study, families must have two or more affected pairs of siblings (brothers/sisters) or 3 or more family members affected with intracerebral aneurysms. Participants are asked to complete a family history questionnaire and a medical history questionnaire. They also have their blood pressure measured and give a small sample of blood. In addition, certain family members are offered the opportunity to undergo a Magnetic Resonance Angiography MRA (a non-invasive diagnostic test) to look for undiagnosed brain aneurysms.

FIA I enrollment was completed in July 2007. Analysis of the genetic results is on-going and will be released in the spring of 2008. The study investigators have submitted to the National Institutes of Health for a continuation of the grant for an additional five years. This opportunity will allow for the enrollment of 300 additional families and 1200 persons with an intracranial aneurysm but no family history. These additional families and people without a family history will allow the study to replicate the genetic findings of FIA I, and to determine if the genetic findings are also present in people without a family history. You can follow the progress of this very important study, as well as the latest findings at the study website www.FIAsStudy.org.

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**“GIANT” Trial**

The Yale University School of Medicine, Department of Neurosurgery is conducting a study on the genetics of intracranial aneurysms called Genetics of Intracranial Aneurysm Trial (GIANT).

This study is focused on identifying genes contributing to the formation and bleeding of brain aneurysms. The principal investigator, Dr Murat Gunel, and his team, have been conducting research into the causes of aneurysms for over a decade. The study is conducted under the auspices of the Yale University School of Medicine’s Human Investigation Committee. This study involves participants from both Finland and the US.

For further information on this study, please contact Anita Farhi, RN at giant@yale.edu or 1-800-575-9253.

For more information on clinical trials in your area, please visit www.clinicaltrials.gov
On September 27, 2007 The Brain Aneurysm Foundation was able to fulfill a 14-year vision – providing money for brain aneurysm research.

During the past 14 years, the BAF has been diligent in serving its mission by providing support to patients and family members, disseminating educational resources on brain aneurysms, their treatment, the recovery process, as well as constantly striving to raise awareness of brain aneurysms to the general public and the medical community alike. But on September 27, 2007, after many years of fundraising, planning, and the development of a distinguished Medical Advisory Board, the Brain Aneurysm Foundation was delighted to provide funding for brain aneurysm research. It is the hope of the BAF that with increased funding for brain aneurysm research, the incidences of early detection will rise, better treatment will be available, and a shorter recovery period will result.

The two award recipients were Liang-Der Jou, Ph.D., and J Mocco M.D.. Liang-Der Jou, Ph.D. is an Assistant Professor of Radiology at Baylor College of Medicine, and J Mocco, M.D. currently serves as Clinical Assistant Professor at Columbia University.

Dr. Jou’s research, entitled “Effects of Perianeurysmal Environment and Hemodynamics on Brain Aneurysm Development,” will evaluate specific factors that may lead to aneurysm growth by examining arterial blood flow. This research will be conducted using a specific scanning technique, DynaCT, along with a standard imaging tool that can evaluate both the tissue around the brain along with the blood vessels. These tools will enable researchers to measure blood flow in and around the aneurysm to see what factors, including aneurysmal shape and size, and whatever force, if any, may contribute to higher risk of aneurysmal rupture.

Dr. Mocco will study the formation of aneurysms resulting from the stress of blood flow on blood vessels in the brain. Dr. Mocco’s research, “Evaluation of the Hemodynamic Induction of Intracranial Aneurysms,” will use specific techniques to induce chronic blood flow and will examine the impact of increased blood flow on vessel walls and the potential impact on the development of aneurysms.

Those in attendance at the Research Grant dinner were treated to presentations from some of the top physicians involved in brain aneurysm research. The physicians who presented were: Robert Rosenwasser, M.D., FACS, Professor of Radiology and Neurosurgery at Thomas Jefferson University Hospital and Chair of the Research Grant Committee, Christopher Putman, M.D., Interventional Neuroradiology Specialist, Inova Fairfax Hospital, Christopher S. Ogilvy, M.D., Director, Brain Aneurysm/AVM Center and Director, Cerebrovascular Surgery Unit, Massachusetts General Hospital, and Brian Hoh, M.D., Assistant Professor of Neurological Surgery and Radiology, University of Florida College of Medicine.

The Brain Aneurysm Foundation looks forward to providing two more research grants in 2008 with the Awards Dinner taking place in Philadelphia.

Innovative Fundraising Concepts

Brain aneurysm survivor, Claire McCarthy of Manhasset, NY decided to challenge herself to sell as many Macy Coupons as she could at $5 each with 100% of each sale going to the BAF. Claire made the decision to set up her own personal tailgate displaying BAF materials and wearing her brain aneurysm awareness T-shirt. Claire was able to raise almost $1,000 for the BAF. Claire also met many people who were happy to talk with her about the experiences they had with a brain aneurysm at some period in their lives. Claire has been a supporter of the BAF Arterial Challenge for many years now. Thanks to Claire for giving of her time to promote brain aneurysm awareness! Job well done.

Another New York survivor Rocco Cassarino, has been donating a portion of his vending machine sales each month for quite a few years now. Rocco, happy with his life after brain aneurysm surgery is thankful for his second chance and wants to do his part to support the BAF and to help better the lives of others impacted by a brain aneurysm. Thanks Rocco!

Bob Briley of Tulsa, Oklahoma, tragically lost his 25 year old son Cody several years ago to a ruptured brain aneurysm. Each year he organizes the “Cody David Briley Picnic and Disc Golf Tournament” for friends and family to come together to celebrate Cody’s life in a fun day of BBQ and games. This year the CDB Picnic raised over $7,000 to benefit The Brain Aneurysm Foundation. We are so grateful for the support we have received over the years.

Thank you to Hiran Yii who held the 2nd Annual Siam Lotus Fashion Show in Philadelphia in September. This was a great event that brought brain aneurysm awareness to many people who otherwise would not know about this terrible disease.
Massachusetts Has Proclaimed September as Brain Aneurysm Awareness Month!

Initially it was Senator Robert Hedlund who sponsored the bill to support September as Brain Aneurysm Awareness Month, but it was Massachusetts Representative Paul Donato who helped expedite the matter in time for the BAF’s 1st Annual Research Dinner.

The Governor signed into legislation on September 13, 2007 that every year going forward Massachusetts will honor September as Brain Aneurysm Awareness Month in order to raise awareness and support brain aneurysm education and early detection.

Supporters in Ohio, Illinois, Florida, New York, and Colorado, are working to ensure that the proclamation will be a yearly designation in their states for Brain Aneurysm Awareness in the month of September.

Anyone wanting information on how to have your state make this proclamation, please contact the BAF office. Hopefully, this will be proclaimed on a national level within a few years. Thanks to all legislatures and BAF volunteers in each state who have worked to make this possible.

A special thanks to Janet Sutherland for being a strong and constant advocate for brain aneurysm awareness. Below is a sample of a special section Janet helped put together during Brain Aneurysm Awareness Month that appeared in the Chicago Sun Times in September.

$10,000 Given to Brain Aneurysm Foundation from The New Jersey Wireless Association First Annual Golf Tournament

On October 19, 2007 The New Jersey Wireless Association held its first Annual Golf Tournament and Charity Fundraiser at Royce Brook Golf Club in Hillsboro, New Jersey. With 135 people in attendance, the event raised $10,000.00 for the Brain Aneurysm Foundation.

Stacie Curtis, President of the Association said, “We want to thank all of our corporate sponsors and attendees. Their support in both time and donations made this a successful event.” Stacie was instrumental in having the BAF chosen as the benefiting charity to honor the loss of her dear friend due to a brain aneurysm.

Knowing the efforts involved in planning and running a successful event, the BAF is extremely appreciative of The New Jersey Wireless Association. Due to their hard work not only did they raise funds, but they also provided much needed awareness. A non-golfer, Rose Papera of Norton, New Jersey attended the luncheon with family and friends to bring her own personal donation in honor of her husband Fred she lost to a brain aneurysm.

Many thanks to The New Jersey Wireless Association! (www.newjerseywireless.org).
The Second Annual BAF Golf Tournament

August 21, 2007 may have been a rainy day at Lake of Isles in Connecticut, but the sun still shined on The Brain Aneurysm Foundation.

Despite many wet golfers at the end of the day, people remained in high spirits while supporting the BAF. About 75 golfers and 15 volunteers gathered post golf to meet new people and share their stories of having in some way been affected by a brain aneurysm.

A special send off to the golfers was given by Kristin Hutchinson of New York. Kristin, Mrs. Brookhaven, was representing her community in the Mrs. New York pageant and was addressing brain aneurysms as her platform. The BAF is grateful to Kristin for the added awareness she raised for brain aneurysms and for taking the time to speak with those who have been affected. Kristin, who lost a cousin to an aneurysm, was inspired by the many survivors she met.

As dinner was being enjoyed, the guest speaker, Dr. Stephen Lewis of Gainesville, Florida addressed the group about his personal connection to the world of brain aneurysms as well as conveying the overwhelming impact brain aneurysms have on so many and the need for a greater awareness and continued research.

Thanks to all who participated or supported this event in some manner which helped raise $20,000 in support of BAF initiatives. We look forward to your support in 2008!

First Annual Auto Show Benefiting the BAF

Thanks to Eric Swarr and his family who held a car show in July to honor their Dad who passed away due to a brain aneurysm.

This was an all day event in Collegeville, PA where people gathered to view old and new cars and were provided statistics on brain aneurysms. This was a great way for the Swarrs to honor and remember their father. It also gave them a chance to share more information on the cause of his death in hopes of saving another’s life as well as providing for early detection and a better recovery.

This is another great example of the help the BAF receives across the country to raise brain aneurysm awareness, as well showing the need for the information to be provided.

This was a first time event that will continue to grow in the future. As put by one of the patrons of the show – “…just wanted to say how much my wife, friends, and I enjoyed your Show. It was a top-notch event….. Thanks for holding such a nice event, and we all hope that your contributions were a huge success. We can’t wait for next year!!!”

Our 3 educational booklets are now available in Spanish!
Contact the office for your copies.

Brain Aneurysm Foundation Chapters in:
Pennsylvania, Texas, Florida, Colorado, and Illinois

Brainstorm Cookbook coming in 2008 – check web for updates.

This Holiday Season Give The Gift That Keeps on Giving

Make the holidays special by making a donation to The Brain Aneurysm Foundation in honor of your loved one. We will send a special holiday card notifying your loved one of your gift. Your donations will help fund brain aneurysm awareness, provide support and education for brain aneurysm survivors and their families, and enable critical brain aneurysm research. Please send your donation and gift info to: The Brain Aneurysm Foundation, 612 East Broadway, South Boston, MA 02127.
A Bike Ride of Love and Thanksgiving

Many thanks to Bill Chamberlin who was one of 10,000 bike riders in Register’s Annual Great Bike Ride Across Iowa (RAGBRAI), a 6-day bike ride across the state. This ride is not a big charity ride but Bill decided to do the ride in honor of his wife, Jennifer, who survived a brain aneurysm and decided to collect donations for the Brain Aneurysm Foundation (BAF). Bill rode over 185 miles during the last three days of RAGBRAI, wearing a BAF T-shirt each day. He met a number of people during the ride who had been impacted by brain aneurysms in some way. Not only did Bill raise brain aneurysm awareness, but he also raised almost $10,000 in honor of his wife Jenns to help the BAF better serve its mission.

“The November 10 2004 around 2pm, my wife, Jenns was lying on the kitchen floor in pain. I was on the phone with 911. I thought she had some type of food poisoning. I was wrong. Deep inside her brain there was a blood vessel getting ready to burst and it was causing her to have the worst headache of her life. Less than 25 minutes later, in the Emergency Room, the blood vessel did burst, causing her to go into a slight coma. I was told to get my daughters, Sara and Allison, to the hospital ASAP. The odds of her surviving were not in her favor.”

The rest of the story is a very happy one. She survived, worked hard at her recovery, and returned to work full time. As you know, only a small percentage of brain aneurysm survivors accomplish this. She continues her recovery still to this day from this life-altering event.

“The BAF website was a great source of information for the family and me in the hours and months after Jenns suffered her aneurysm.”
– Bill Chamberlin

Honor Fraternity Unites to Raise Brain Aneurysm Awareness

The BAF is thankful for the fundraising efforts of Meggan Hennebry, Alpha Chi President at University of North Carolina at Greensboro and her fellow brothers of Phi Sigma Pi – a Co-ed National Honor Fraternity.

Meggan’s dear family friend, Sue Zagiba died suddenly of a brain aneurysm on May 23, 2006 at the age of 47 shortly after celebrating with family and friends for her daughter’s Sweet 16 birthday party. When Meggan heard the news she did not know what a brain aneurysm was. She also realized she hears so much about cancer and heart disease, but nothing on brain aneurysms, so she wanted to bring some attention and awareness to the cause.

With the help of her “brothers” at UNCG, Meggan organized an a capella concert and a kick ball game to raise funds for the BAF and present information on brain aneurysms at their campus. Meggan reported that after her awareness efforts many people thanked her for having the information on brain aneurysms available to them.

This is another great example of how a local community can come together and make a difference to bring brain aneurysms to the attention of the general public.

Sue’s husband Dale tells us, “…..she was known for her helping spirit and giving heart and made so many friends and touched so many lives.”

UPCOMING EVENTS

Third Annual BAF Golf Tournament
Date: Monday, June 30, 2008
Where: Lake of Isles – Private Course
Foxwoods Resort and Casino, Ledyard, Connecticut

7th Annual Arterial Challenge and Road Race
Date: May 25, 2008
Where: Marshfield, MA
Pre-Race gathering May 24
*Consider doing a run/walk in your area!
Call BAF for details.

Brain Aneurysm Awareness Week
Dates: September 8 - 12, 2008

2nd Annual Research Grant Awards Dinner
Date: September 2008
Where: Philadelphia
More details to follow

Visit www.bafound.org for more information
DONATE

To make good use of the income tax charitable deduction, consider a year-end gift to help lower your income taxes. But more importantly, your philanthropy will make a significant impact in the life of those affected by brain aneurysms.

Every donation matters - every dollar counts. Your donations are needed to support the mission and vision of the BAF. Your donation will go towards the reproduction and update of booklets and other educational materials, the production of the newsletter, the maintenance of the website, and towards future research grants.

General Donations
Send a general donation to support the ongoing efforts of the Brain Aneurysm Foundation.

In Memoriam Donations
Make a donation in memory of someone close to you who has been affected by this illness.

Charitable Remainder Trusts
A charitable remainder trust (CRT) is an irrevocable trust whose beneficiary is a charitable organization. Throughout his or her lifetime, the donor receives regular payments (fixed or variable) from the trust. When the donor dies, the charity receives the remaining principal.

Charitable Lead Trusts
A charitable lead trust (CLT) is almost the opposite of a CRT. With a CLT, the charity receives regular income generated by the trust throughout the donor’s lifetime. When the donor dies, his or her heirs receive the assets in the trust.

Pooled Income Funds
A pooled income fund is an irrevocable trust to which several donors may contribute. Funds are administered by a charitable organization and pay donors regular income for life. When a donor dies, his or her contribution to the fund becomes the property of the charity. With this type of fund, donors are not subject to capital gains taxes and can reduce their current taxable income and estate.

Charitable donations can take many forms, including cash, securities, life insurance, or even your free time. For further information please visit our website at www.bafound.org.