MDD After TBI Associated With Comorbidity, Disability

Rates of Major Depressive Disorder and Clinical Outcomes Following Traumatic Brain Injury.

Bombardier CH, Fann JR, et al:

JAMA 2010; 303 (May 19): 1938-1945

MDD is very common in patients after TBI. Aggressive efforts are needed to educate clinicians about MDD after TBI, promote systems of detection, and conduct studies aimed at overcoming barriers to treatment.

**Background:** Major depressive disorder (MDD) may be the most common and disabling psychiatric disorder in patients after traumatic brain injury (TBI). Rates, predictors, and outcomes of MDD after TBI remain uncertain.

**Objective:** To describe the rate of MDD during the first year after TBI, predictors of MDD, MDD-related comorbidities, and relationship of MDD to quality of life outcomes.

**Design:** Prospective single-institution cohort.

**Participants/Methods:** Patients suffering TBI with Glasgow Coma Scale score <13 from June 2001 to March 2005 were assessed via telephone interviews monthly 1 to 6 months after injury and at 8, 10, and 12 months. Patients were excluded if alcohol level was >199 mg/dL without radiographic abnormality. Other exclusion criteria were homelessness, incarceration, and schizophrenia. Depression at injury was determined if within 6 months of TBI patients were diagnosed with depression or had depression-related use of antidepressant medications. Preinjury depression was defined as receiving a diagnosis of depression or making suicide attempt. Depression following TBI was based on responses to the Patient Health Questionnaire 9-item depression scale (PHQ-9). Patients had MDD if depressed mood or anhedonia and ≥5 symptoms at least several days during the prior 2-week period. Antidepressant medication and depression counseling was determined. Quality of life at 1 year was assessed on the 36-Item Short Form Health Survey.

**Results:** 559 of 1080 eligible patients consented to participate, and completed 79% to 90% of planned interviews. In total, 297 of 559 patients (53.1%) met criteria for MDD at least once in the year following TBI. Median time of depression was 4 months. Predictors of MDD after TBI included: depression prior to injury, depression at time of injury, age ≥60 years, and alcohol dependence. Those with MDD after TBI were more likely to experience panic disorder and other anxiety disorders. Only 44% of those with MDD received antidepressant medication or counseling. MDD was associated with increased difficulties with mobility, usual activities, pain/discomfort, and role functioning in quality of life assessment.

**Conclusions:** MDD after TBI is very common and is associated with increased comorbidity and disability. Aggressive efforts are needed to educate clinicians about MDD after TBI, promote systems of detection, and conduct studies aimed at overcoming barriers to treatment.

**Reviewer's Comments:** This study reveals that MDD is very common after TBI. It also shows that not all of those with MDD are treated, and that MDD negatively impacts quality of life. Barriers to treatment are not quantified or qualified -- these barriers may include lack of physician intervention, lack of patient access, or lack or patient compliance. Not answered is whether treatment for MDD improves quality of life. Recognition of MDD after TBI and efforts to ensure treatment is warranted with hopes that patient outcome may be improved. (Reviewer-N. Scott Litofsky, MD).

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Keywords: Brain Injuries, Major Depressive Disorder, Quality of Life, Anxiety Disorders

Print Tag: Refer to original journal article
5-ALA Helps Achieve Complete Malignant Glioma Resection

Counterbalancing Risks and Gains From Extended Resections in Malignant Glioma Surgery: A Supplemental Analysis From the Randomized 5-Aminolevulinic Acid Glioma Resection Study.

Stummer W, Tonn JC, et al:

J Neurosurg 2010; April 16 (): epub ahead of print

Neurological deficits occurring after radiological complete resection of high-grade glioma using 5-ALA tend to be transient, occurring in patients whose preoperative neurological deficits persist despite steroids.

Background: Chemoradiation is most efficacious after "complete" resection of malignant glioma, although surgical complications may be increased. Fluorescence-guided resection using 5-aminolevulinic acid (5-ALA) can optimize resection extent.

Objective: To evaluate the risks associated with 5-ALA fluorescence-guided resections and whether such risks are justified.

Design: Secondary analysis of parallel randomized balanced group-sequential 2-armed controlled multicenter Phase III study.

Methods: Patients aged 18 to 72 years with newly diagnosed suspected untreated malignant glioma with ring-enhancement pattern on MRI were randomized to have resection performed after presurgical administration of 5-ALA with filtered, violet-blue microscope light compared to resection without 5-ALA under white microscope light. Surgery was followed by 60 Gy radiation therapy and no concurrent chemotherapy. Extent of resection was assessed with gadolinium MRI within 72 hours of surgery; residual tumor was defined at contrast enhancement volume >0.175 cm3. Neurological function was assessed using the National Institutes of Health Stroke Scale (NIH-SS) score 2 days, 7 days, 6 weeks, and every 3 months after surgery. Progression (>25% increase in size of enhancing tumor on MRI or neurological worsening) and steroid use was compared.

Results: Demographics of 176 5-ALA resection patients were similar to 173 white-light resections. Overall, 63.6% of 5-ALA patients had no residual tumor compared to 37.6% after white-light resection. Median residual tumor volume was 0.0 cm3 in 5-ALA patients and 0.5 cm3 in white-light patients. Progression-free survival at 6 months was better after 5-ALA (35.2%) compared to white light (21.8%). NIH-SS score deteriorated by ≥1 point 48 hours after surgery in 26.2% of 5-ALA patients compared to only 14.5% of white-light patients. At 7 days postoperative, the NIH-SS difference was not statistically different. Deterioration was only found in patients whose preoperative deficits persisted after steroids. Karnofsky performance score showed no differences between groups at 6 weeks and 3 months. In both groups, survival was better after complete resection (16 months vs 12 months) and 6-month rate of NIH-SS stability was also better (76.6% vs 66.2%).

Conclusions: Patients at risk during cytoreductive surgery are those whose symptoms fail to respond to steroids. Transient impairments after extended resections are counterbalanced by long-term benefits.

Reviewer's Comments: This paper revisits the benefits of 5-ALA in helping to achieve "complete" resection of malignant glioma with a ring-enhancing pattern, almost all of which were Grade IV. These benefits include improved progression-free survival, overall survival, and long-term stability of neurological function. The costs--transient neurological worsening, which clears relatively rapidly--are relatively minimal. Furthermore, this worsening is relatively predictable, occurring in patients whose preoperative deficits do not resolve with steroids. 5-ALA is a promising adjunct to surgical treatment of malignant glioma, and radiological "complete resection" is a laudable goal of surgery, when possible. (Reviewer-N. Scott Litofsky, MD).

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Keywords: Malignant Glioma, Resection, Surgical Risk, 5-Aminolevulinic Acid

Print Tag: Refer to original journal article
Tumor cells of low-grade oligodendroglioma extend beyond the MRI-defined border, impacting the ability to perform “complete” resection.

**Background:** Optimal treatment of diffuse low-grade gliomas (DLGG) includes maximal tumor resection preserving neurological function. How well MRI defines the margins of well-circumscribed DLGG is unclear. **Objective:** To assess the accuracy with which MRI measures the true boundaries of DLGG. **Design:** Single-institution retrospective case series. **Participants/Methods:** 16 patients had MRI-based stereotactic biopsies of low-grade oligodendrogliomas via the Talairach stereotactic method using a 10-mm window side-cutting Sedan-Vallicioni biopsy cannula. Preoperative MRI had well-defined hypersignal on T2-weighted and FLAIR sequences. Biopsy trajectories included sites within (InBS) and outside (OutBS) signal abnormality. Biopsy sites were confirmed with reassessment of 3-dimensional coordinates with intraoperative teleradiographic x-ray images and postoperative manually merged MRI. Specimens were single immunostained with GFAP, Olig2, and MIB-1. Double immunostaining of OutBS was performed with GFAP and MIB-1 and Olig2 and MIB-1 to define isolated tumor cells beyond MRI hypersignal boundaries. Growth fraction and cell densities were compared to brain parenchyma from access corridors in 5 patients with meningioma or vestibular schwannoma. **Results:** 64 InBS showed obvious tumor components; 37 OutBS had no increase in cell density, no edema, and no gliosis, but 35 had MIB-1 positive cells coexpressing Olig2. Median number of MIB-1 positive cells in OutBS was 12.8/cm². Number of MIB-1 positive cells in OutBS sites 10 to 20 mm from MRI boundary (17.6/cm²) was higher than those beyond 20 mm (8.5/cm²). OutBS sites within 20 mm of MRI boundary had significantly less MIB-1 cells than controls (4.2/cm²); beyond 20 mm of MRI boundary, OutBS cell number did not differ from controls. OutBS cell number was higher in tumors with MIB-1 growth fraction ≥4% (23.2/cm²) than <4% (11.6/cm²). **Conclusions:** MRI underestimates the actual spatial extent of DLGG. Resection of a margin extending beyond MRI boundaries may improve outcome. **Reviewer's Comments:** This study shows that in oligodendroglioma, a tumor representative of DLGG, tumor cells extend well beyond the margin of MRI abnormality. This characteristic of gliomas has been well recognized for many years, and is one of the reasons that gliomas recur despite intensive ablative local therapies, such as surgical resection or stereotactic radiosurgery. The "diffuse" component of the very name of DLGG indicates such behavior. Restricting the study to oligodendrogliomas, which are GFAP-negative, helps to minimize confusion between tumor cells and reactive astrocytes. The study does not substantiate the authors' conclusion that extending resection margin into normal-appearing brain on MRI may improve outcome. Tumor cells may extend beyond that resective margin, and other potential factors, such as repopulation of tumors sites by aberrant progenitor cells capable of developing into tumors themselves, may thwart such strategies. (Reviewer-N. Scott Litofsky, MD).

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Keywords: Diffuse Low-Grade Glioma, Oligodendroglioma, MRI, Margin, Stereotactic Biopsy

Print Tag: Refer to original journal article
Psycosurgery for intractable alcoholism leads to abstinence in >50% of patients.

**Background:** 12 patients diagnosed with intractable alcoholism and having failed conventional therapy voluntarily enrolled in a treatment program involving bilateral lesion of the nucleus accumbens (NA<sub>c</sub>). In 2003, the same authors published a similar series of 28 patients.

**Objective:** To report the authors' additional experience with ablating the NA<sub>c</sub> in a new group of patients.

**Design:** Retrospective study.

**Participants/Methods:** All candidates had a long history of alcoholism and failed detoxification. They all drank more than the equivalent of half a liter of 100% alcohol per day. Prior to surgery, all candidates were detoxified over 10 days. At the time of surgery, NA<sub>c</sub> was located on MRI, recorded, and a lesion of 0.5 cm in diameter was made. Success was determined by the absence of drinking alcohol. The follow-up period ranged from 6 to 27 months.

**Results:** 9 of 12 patients had no reoccurrence of drinking at 6 months and 7 of 12 at 1 year. Only 1 complication was reported, which was temporary hyposmia in 1 patient. Measures of intelligence and memory were improved at 1 year.

**Conclusions:** 1 year following bilateral NA<sub>c</sub> lesion, 58% of patients were abstinent. The authors suggest that deep brain stimulation might be a better alternative.

**Reviewer's Comments:** Surgery for addictive behavior as reported here is controversial, especially since it is unclear who decides that this treatment is appropriate and for what indications. After all, there are behaviors other than alcoholism that are judged socially unacceptable. While there are many ethical issues that could be addressed, from the scientific point of view, I am not convinced that this treatment is beneficial to the patient. It would have been much more interesting if the authors would have included the follow-up data from their previous series of 28 patients. Finally, the authors should have presented the postoperative imaging and mapping of the location of the lesions, as well as a detail follow-up showing the impact of this surgery on the ability of these patients to function in society. (Reviewer-Luc Jasmin, MD).
Background: To present an update of the authors’ series of stereotactic radiosurgery (STR) for cerebral cavernous malformations (CCM).

Design: Retrospective single-center study with a follow-up of 2 to 20 years.

Participants/Methods: All patients (aged 5 to 79 years) had bleeding at least twice. In total, 64% of the CCM were located in the brainstem, 26% in the central gray, and 10% were hemispheric. The CCM margin was defined by the band of hemosiderin deposits seen in T2 as a ring of mixed signals. One to 14 isocenters were planed with the 50% isodose at the margin. The mean margin dose was 16 Gy (12 to 20 Gy) and the mean maximum dose was 30 Gy (22 to 40 Gy).

Results: In 57%, post-STR imaging revealed a decrease in the target size. A new hemorrhage occurred in 11% during the first 2 years post-STR, and in 1% after >2 years post-STR. Compared to the natural history, this is a marked decrease in the incidence of bleeding. T2 imaging anomalies appeared in 19 patients. Neurologic worsening occurred in 14 of these 19 patients, most of which improved on steroid therapy. In the recent 50 patients, the rate of T2 changes dropped to 8% with no neurologic complications because of better dosimetry. Out of 8 patients with epilepsy, 7 were seizure free after STR, with 6 being off medications.

Conclusions: Better imaging and dosimetry has improved the outcomes of STR for CCM. The therapeutic dose must be within the hemosiderin peri-lesional ring.

Reviewer’s Comments: These encouraging results will not end the debate on whether STR is an appropriate therapy for CCM. Currently, most patients recruited for STR are poor candidates for surgery and at high risk of rebleeding. Unknown is whether patients having bled just once and wishing to avoid open surgery would benefit from STR. The debate over these questions is unlikely to be resolved by the ongoing North American trial given that the recruiting of patients has been problematic. As mentioned by Nagy, it is unlikely that patients fearing the risk of rebleeding would accept to be randomized. As a compromise, a national data bank of all patients diagnosed with CCM could be created. For those that want to know more, please read the editorial of Steiner criticizing the present manuscript, as well as the article by Nagy reporting his own experience in the U.K., and the related editorial of Sheehan and Schlesinger, all of which are available online ahead of print in the Journal of Neurosurgery. (Reviewer-Luc Jasmin, MD).

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Keywords: Cavernoma, Gamma Knife, Brainstem, Thalamus, Deep Hemispheric

Print Tag: Refer to original journal article
Neurological function declines in the majority of patients postoperatively. Therefore, it is reasonable to consider observation in patients with minimal neurological dysfunction.

**Background:** 2% to 4% of central nervous system tumors are spinal cord neoplasms. Most of these are low-grade lesions. High-grade astrocytomas occur less frequently. They occur mainly in the cervical thoracic segment and have a tendency to occur in the first decade of life.

**Objective:** To evaluate functional outcome and recurrence rates after surgical removal of intramedullary high-grade gliomas.

**Methods:** The authors reviewed their experience with such lesions between December 1976 and December 2006. Twenty-two patients underwent removal of intramedullary high-grade gliomas. Lesions were located in the cervical spinal cord in 12 patients, and in the thoracic cord in 10.

**Results:** Histological examinations showed 10 Grade III astrocytomas and 12 glioblastomas. Only 2 of the 22 high-grade astrocytomas could be completely removed. The clinical postoperative status worsened in 14 patients (63.6%), was unchanged in 7 patients (31.8%), and there was 1 case of intraoperative death (4.5%). None of the 22 patients showed improvement in their neurological status postoperatively. In this series, excluding the 1 intraoperative death, all patients died of progression of the malignancy. The surgery alone group had a mean survival of 10.6 months. The surgery plus radiotherapy and chemotherapy group had a statistically significant longer mean survival of 22 months.

**Conclusions:** Surgical treatment did not improve the postoperative neurological status; instead, in the majority of cases, it prompted a worsening of the deficit. Radiotherapy and chemotherapy have some influence on the length of survival. In this series, multimodality treatment of intramedullary high-grade astrocytomas has been shown to increase length of survival without improving the neurological status.

**Reviewer's Comments:** Management of high-grade spinal cord astrocytomas is continually debated in neurosurgical practice. Even after this review, the role of subtotal resection or even biopsy still remains unclear. There were no differences in the length of survival between patients with a Grade III astrocytoma and those with a Grade IV tumor. Most patients were neurologically worse after surgery; therefore, observation in patients with good neurological function should be considered. (Reviewer-Martina Stippler, MD).

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Keywords: Intramedullary Tumors, Treatment, Outcome

Print Tag: Refer to original journal article
Continuous ICP monitoring cannot substitute for close clinical and radiological follow-up in the management of these patients.

**Objective:** To present the findings of continuous intracranial pressure (ICP) monitoring in patients with malignant middle cerebral artery (MCA) infarction and to correlate these findings with clinical and radiological features.

**Design/Methods:** A prospective cohort of 25 consecutive patients with malignant MCA infarction was enrolled in this study. All patients were admitted to the neurotrauma intensive care unit between March 2002 and September 2006. The patients were treated using a combined protocol of initial moderate hypothermia and hemicraniectomy. The latter was performed when patients showed a midline shift (MLS) ≥5 mm or ICP >20. Six patients had an MLS ≥5 mm on the first CT scan and underwent surgery without prior ICP monitoring. This study focuses on the subgroup of 19 patients who underwent intraparenchymatous ICP monitoring before surgery. The ICP sensor was implanted on the side of the cerebrovascular accident. General patient care consisted of sedation, analgesia, and hypothermia.

**Results:** In about two thirds (63%) of patients, ICP values were always ≤20 despite a MLS >15 mm. In 2 patients with anisocoria, ICP values were also normal.

**Conclusions:** In patients with a malignant MCA infarction, pupillary abnormalities and severe brainstem compression may be present despite normal ICP values. Therefore, continuous ICP monitoring cannot substitute for close clinical and radiological follow-up in the management of these patients.

**Reviewer's Comments:** In interpreting this study, it should be mention that the authors used paralysis, hyperventilation and mannitol, and 7.2% saline to control high ICP. On the other hand, the authors state patients with ICP >20 were taken to the operating department for decompression. It is not clear when and for how long conservative ICP therapy was used before the decision was made to take the patient to the operating department. However, this study answers an important question regarding management of cerebral edema after MCA infarction. In short, it seems that imaging characteristic and neurological exam are still the best parameters we have to judge to determine whether a patient needs to undergo a decompressive hemicraniectomy after a cerebral infarction. (Reviewer-Martina Stippler, MD).

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Keywords: Stroke, Hemicraniectomy, Intracranial Pressure Monitoring

Print Tag: Refer to original journal article
Bevacizumab has been shown to shrink vestibular schwannomas in patients with NF2. Chemotherapy with this agent may allow for prolongation of residual hearing and maintenance of neurological function.

**Background:** Bevacizumab (Avastin) is an antiangiogenesis human monoclonal antibody that binds to vascular endothelial growth factor (VEGF). It is suspected to prevent the growth of new blood vessels that tumors require to grow. It has been used effectively in glioblastomas and is now being tested in vestibular schwannomas, which also express VEGF.

**Objective:** To report the reduction in volume of vestibular schwannomas in patients with neurofibromatosis type 2 (NF2) after treatment with Avastin.

**Design:** Clinical case series and review of the current literature.

**Participants/Methods:** 2 patients who were considered poor surgical candidates were treated with Avastin intravenously with the objective of reduction in volume of tumor size and either preservation or improvement of hearing.

**Results:** The patients experienced reduction in tumor volume of 40%. Hearing was maintained in both. One patient was reported to have improvement, but this was minimal at best according to the data presented. Side-effects included hypertension, which was medically controlled in 1 case, and mild epistaxis in the other.

**Conclusions:** Bevacizumab has been shown to shrink vestibular schwannomas in patients with NF2. Chemotherapy with this agent may allow for prolongation of residual hearing and maintenance of neurological function. The side-effects of bevacizumab include hypertension, bleeding, embolism, and renal complications.

**Reviewer's Comments:** It is not yet known what the long-term effects will be for treatment of benign tumors with bevacizumab. Also unclear is the duration of treatment needed to see a sustained effect and what complications there will be from long-term use of these agents. It is possible that we may in the future use these drugs as adjuvant therapies to shrink tumors prior to definitive surgical resection. Additional work is needed, but it is promising that we have found chemotherapeutic agents that can reduce tumor volume in these complex cases with few good alternative options available. (Reviewer-Andrew J. Fishman, MD).

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Keywords: Neurofibromatosis Type 2, Chemotherapy, Vestibular Schwannoma, VEGF Inhibitors

Print Tag: Refer to original journal article
Adolescents who underwent reconstructive surgery for SSC during infancy have similar neurocognitive functions compared to normal controls.

**Background:** Sagittal and unicoronal craniosynostosis (CS) are the most common forms of single-suture craniosynostosis (SSC). The majority of cases are sporadic and considered by many to be purely a cosmetic problem. Some authors have suggested that brain damage can also occur in these cases as the result of distorted brain growth and abnormal cerebrospinal fluid dynamics. Many investigators have attempted to answer the question of whether cognitive function is negatively affected when cranial surgery does not take place or is delayed and the results are conflicting.

**Objective:** To evaluate the cognitive function in a series of adolescents who underwent surgery for SSC when they were aged <1 year.

**Participants/Methods:** 65 children were evaluated (35 sagittal, 30 unicoronal). Mean age at surgery was 7.2 months and patients were about 14 years at neuropsychological evaluation. The battery of tests applied were tailored to age, cognitive level, and cooperation and evaluated fine motor skills, language, visual motor spatial and visual perceptual skills, working and visual memory, attention, executive function and verbal fluency, coordination, and auditory attention. Mental developmental index was not significantly different from those obtained in normal children.

**Results:** All children in the series reached IQ levels within normal range. Selective evaluations showed that a minority of children with sagittal CS had visual attention and visual spatial planning defects whereas verbal fluency and working memory were the only functions that were below average in unicoronal CS subjects. Children with anterior left plagiocephaly had significant lower verbal IQ than performance IQ, while cases with right anterior plagiocephaly were equal as the controls.

**Conclusions:** The authors concluded that their results "support the hypothesis that children with SSC, even though surgically treated early, may present lower than average results at long-term selective neuropsychological evaluations".

**Reviewer's Comments:** When facing the parents of SSC infants in clinic, especially when cosmetics are of moderate relevance, recommending surgery is actually not such a clear issue when the only other associated risks, at least in theory, are those related to increased intracranial pressure secondary to the synostosis. Based on the literature and the results of the present study, when I counsel the parents of children with SSC I make it clear that the main purpose of surgery is cosmetic, that there are intrinsic risks of minor cognitive deficits that won't be corrected by surgery, and that in theory it may have some protective role for the few patients with a potential risk of having future issues caused by increased intracranial pressure. (Reviewer-Amir Kershenovich, MD).

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Keywords: Craniosynostosis, Cognitive Function

Print Tag: Refer to original journal article
Multiplicative Relationship Between At-Risk IA Alleles and Smoking

The Relationship Between Smoking and Replicated Sequence Variants on Chromosomes 8 and 9 With Familial Intracranial Aneurysm.
Deka R, Koller DL, et al:

Stroke 2010; 41 (June): 1132-1137

In this study, 3 of 6 SNPs genotyped were associated with IAs. Cigarette smoking has a multiplicative effect on the risk of developing IAs in the high-risk population.

Background: Several genomic sequence variants on chromosomes 2, 8, and 9 have been associated with an increased risk of intracranial aneurysms (IA).

Objective: To confirm these associations and to study the effect of smoking on the risk of developing an IA in a population with a known genetic predisposition.

Participants/Methods: White individuals with IA and a positive family history of IA were recruited from 26 international clinical sites. White control subjects known to be free of IA were randomly selected out of the greater Cincinnati population. Previously identified single nucleotide polymorphisms (SNP) on chromosomes 2, 8, and 9 were genotyped. In total, 6 variants were studied--2 on each chromosome. Logistic regression models were then used to test how smoking modulates the development of IA in a genetically predisposed population.

Results: 406 patients and 392 control subjects were enrolled. Overall, 47.3% of patients were current smokers and 35.2% were prior smokers versus 16.6% and 35.7%, respectively, in the control group. The strongest association was found with one of the SNP's on chromosome 8. Both SNPs on chromosome 9 were found to be significantly associated with IA. The authors weren't able to replicate the link between the variants on chromosome 2 and IA. Logistic regression analysis showed a multiplicative relationship between smoking and the high-risk alleles.

Conclusions: Three of 6 SNPs genotyped were associated with IAs. Cigarette smoking has a multiplicative effect on the risk of developing IAs in the high-risk population.

Reviewer's Comments: The importance of this paper is 2-fold -- first, it confirms the association between predefined SNPs and IA although the exact gene variants are yet to be determined. Second, it underlines the huge impact of smoking, an environmental factor, on IA development. What is also interesting is that the same regions on chromosome 9 are also linked with other arterial diseases such as myocardial infarction, coronary artery disease, and abdominal aortic aneurysms highlighting potential commonalities between these different pathological processes. These commonalities could yield clues to a better understanding of the mechanisms behind IA formation. We are still far from being able to develop rational screening protocols for the population, but this study brings us a step closer. The synergy between smoking and genetic susceptibility warrants further investigation. (Reviewer-Bernard R. Bendok, MD).

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Keywords: Familial, Genome Wide Association Studies, Intracranial Aneurysm, Smoking

Print Tag: Refer to original journal article
Patients with TAA are at a higher risk of developing IA and should therefore be screened for a possible association.

**Background:** A link between aortic and intracranial aneurysms has been recently suggested but has not been well established. Such a link, if established, could pave the road toward rational screening protocols and perioperative risk assessments.

**Objective:** To analyze the authors’ thoracic aortic aneurysm (TAA) population for a possible association with intracranial aneurysms (IA).

**Design/Participants:** The authors retrospectively reviewed the records of 1560 patients who had undergone TAA repair from 1997 to 2009.

**Methods:** Of 1560 patients, 212 had also undergone high-quality intracranial imaging. For 52 of 212 patients, imaging was performed for various relevant clinical reasons. These patients were termed the nonprospective group. The remaining 160 patients underwent cerebral imaging for the purpose of this study and were termed the prospective group. The patients were further categorized into ascending TAA and descending TAA subgroups. The authors then analyzed the relation of known risk factors and epidemiological parameters to the risk of IA/TAA association.

**Results:** The prevalence of IA in the TAA group was 9%. In the general population, the prevalence is 1%. When considering exclusively the prospective subgroup, the prevalence was 6.3%. In the descending TAA subgroup, IA prevalence was significantly higher than in the ascending TAA subgroup—a difference that persisted when only the prospective patients were taken into account but without reaching statistical significance. Hypertension was noted to be significantly associated with an increased risk of IA presence in the TAA group—a trend also seen in the prospective group but without statistical significance. Smoking was found to be a significant factor exclusively in the prospective group. All other studied factors such as age, gender, and race were not found to be statistically significant.

**Conclusions:** Patients with TAA are at a higher risk of developing IA and should therefore be screened for a possible association.

**Reviewer’s Comments:** Despite the high prevalence of intracranial aneurysms and the associated morbidity of rupture, criteria for screening the general population have not yet been developed. Improvements in MRA sensitivity, a reduction in its cost, and greater insight into risk factors could pave the way for a screening approach. In addition, in the not too distant future genetic, familial, and environmental risk factors will likely be used to compute individual risk for IA disease. This may form the basis for rational screening, prevention, and preemptive treatment. This study draws our attention to a potential relationship between 2 diseases with significant risk to aging populations. These 2 diseases have been studied in isolation for the most part. A closer look at areas of commonality and larger prospective epidemiological studies are warranted. (Reviewer-Bernard R. Bendok, MD).

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Keywords: Aortic Aneurysm, Intracranial Aneurysm, Risk Factors, Prevalence

Print Tag: Refer to original journal article
Better Data Need to Be Acquired Before Choosing STR for Cluster Headaches


Kano H, Kondziolka D, et al:

J Neurosurg 2010; April 30 (): epub ahead of print

STR can give prolonged relief from intractable cluster headaches in up to 60% of patients.

**Background:** Roughly 20% of patients with cluster headaches (CH) fail medical treatment. The value of stereotactic radiosurgery (STR) for the treatment of cluster headaches remains to be established.

**Objective:** The North American Gamma Knife Consortium presents its first evaluation of the treatment of CH.

**Design:** Retrospective multicenter study, with a follow-up period of 3 to 76 months.

**Participants/Methods:** The results obtained in 17 patients from 4 institutions were collected and analyzed. Duration of CH ranged from 1.3 to 40.0 years. Ten of 17 patients previously had at least 1 surgical procedure. One of 3 different treatments was given: (1) STR of the trigeminal nerve root alone; (2) combined STR of the trigeminal nerve root and the sphenopalatine ganglion (SPG); and (3) STR of the SPG alone. Pain relief was measured on a scale of 1 to 5.

**Results:** Prolonged pain relief was observed in 59% of patients. Repeat gamma knife had to be done in 3 patients. In 50% of patients, sensory changes were present after the treatment.

**Conclusions:** STR is effective in CH. The complication rate is higher than that seen in patients with trigeminal neuralgia. It is unclear, however, if irradiation of the SPG is helpful.

**Reviewer’s Comments:** This is a small series from which hardly any conclusions can be made because it is not homogenous. Some patients had previous surgeries, some not, some had the episodic form of CH, others the chronic form, and not all patients had autonomic signs. Also, 3 different treatment groups, according to the sites of irradiation, are lumped together. Some patients were even irradiated twice. Only 3 patients stopped taking their pain medications. The criteria to opt for a given site of irradiation are unclear. For instance, while 3 patients had no autonomic symptoms, one of them (#6) received SPG irradiation. Also, successful targeting of the irradiation is unclear since there is no mention of postprocedure imaging, and in 4 patients (#5, #14, #15 and #17), autonomic signs were still present after irradiation of the SPG. The criteria for diagnosis and follow-up exam are limited, and there is not a neurologist among the authors. Finally, the 3-month follow-up in one patient is too brief. Better data need to be acquired before choosing STR for CH. (Reviewer-Luc Jasmin, MD).

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Keywords: Trigeminal Nerve, Sphenopalatine Ganglion, Lesion, Sensory Loss, Cluster Headaches

Print Tag: Refer to original journal article