The neurocutaneous disorders, also known as the phakomatoses, are a group of hereditary conditions that have neurological manifestations as well as benign cutaneous lesions.

**Background:** The neurocutaneous disorders, also known as the phakomatoses, are a group of hereditary conditions that have neurological manifestations as well as benign cutaneous lesions; both tissue types share a common embryologic origin. **Neurofibromatosis:** Neurofibromatosis (NF) is the most common neurocutaneous disorder. Although there are as many as 8 distinct forms of NF, the term is most commonly used to refer to the 2 most common subtypes: NF1 and NF2. While the 2 disorders share a common name, they are distinct hereditary conditions that arise as a result of different genetic mutations. The **NF1** gene is located on chromosome 17q and encodes neurofibromin, a tumor suppressor gene that plays a role in the negative regulation of the ras proto-oncogene. **NF2** is inherited in an autosomal dominant fashion. The disorder is due to a mutation on chromosome 22q, which encodes for the protein merlin (or schwannomin), which is a membrane-related protein thought to function as a tumor suppressor. **Tuberous Sclerosis Complex:** Tuberous sclerosis complex is the second most common neurocutaneous disorder following NF. It is characterized by hamartomas of several organs, including the skin, brain, eyes, and kidneys. Tuberous sclerosis complex was first described by Bourneville in 1880, and is also known as Bourneville disease. The annual incidence is approximately 1 in 5800 individuals. **Von Hippel-Lindau Disease:** von Hippel-Lindau disease (VHL) is characterized by the presence of both benign and malignant tumors in multiple systems, including hemangioblastomas of the cerebellum and spinal cord, retinal angiomas, and renal cell carcinomas. Eugen von Hippel first recognized the hereditary nature of retinal angiomas in 1904, and Arvid Lindau first reported their connection with cerebellar hemangioblastomas in 1927. **Sturge-Weber Syndrome:** Sturge-Weber Syndrome is a neurocutaneous syndrome characterized by a leptomeningeal angioma, with an ipsilateral cutaneous vascular malformation (port-wine stain), often in the ophthalmic distribution of the trigeminal nerve. The condition, first described by William Sturge in 1879, is also referred to as encephalotrigeminal angiomatosis, and has an estimated incidence of 1 in 50,000 individuals.

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Keywords: Neurocutaneous Disorders

Print Tag: Refer to original journal article
Rinsing during endoscopic third ventriculostomy should be performed under no pressure with a patent outflow channel to prevent the potential occurrence of Terson syndrome.

**Background:** Endoscopic third ventriculostomy (ETV) to treat obstructive hydrocephalus is safe and efficacious. Its success rate in third ventricle hydrocephalus is 75% to 80%. Complications associated with this procedure are varied, and prepontine arterial hemorrhages are among the most severe ones. **Objective:** To report a case of iatrogenic Terson syndrome, a perioperative complication leading to bilateral retinal hemorrhages. **Case Discussion:** The patient is a 38-year-old female who presented to the authors’ center with symptomatic hydrocephalus and signs of increased intracranial pressure (ICP). She was complaining of headaches and changing visual acuity (VA), and an ophthalmological evaluation showed mild papilledema with normal vision. A CT scan of the head was performed prior to presentation showed triventricular obstructive hydrocephalus possibly caused by a cystic lesion in the region of the pineal gland. Upon admission, an MRI of the brain confirmed the CT findings, and an ETV with fenestration and/or lesion biopsy was planned. At the time of surgery and following creation of a bur hole, a rigid 6-mm lens scope was introduced through the shaft into the ventricle. Two working-channels within the shaft were then added, and the surgeon asked that the rinsing line be connected to the Ringer’s lactate to irrigate the ventricle and improve visibility. However, the Ringer’s lactate was erroneously placed into a pressure bag, and rinsing occurred under high pressure. After a few seconds, severe bradycardia and abrupt hypertension were noted. The endoscope was therefore removed from the shaft and a substantial amount of CSF gushed out. The heart rate and blood pressure immediately normalized. The pressure bag was then removed and the procedure continued uneventfully with fenestration of the cystic lesion. Postoperatively, the patient complained of decreased vision in both eyes and an ophthalmological exam showed markedly decreased VA with perception of hand motion at 2 m in both eyes. A fundoscopic exam demonstrated sub-, intra-, and preretinal hemorrhages in both posterior poles along with papilledema. Goldmann visual field exam showed bilateral central scotoma. A few months later, the hemorrhages progressively resolved. The VA ameliorated to 0.1 bilaterally at 3 months. In light of the visual deterioration experienced by the patient postoperatively, along with the uncertain relief of ICP, a ventriculoperitoneal shunt was implanted at postoperative day 10. At 5-year follow-up, the cyst was stable and no shunt malfunction had occurred; VA was 0.7 on the right and 0.3 on the left. **Conclusions:** The authors emphasized the role of a suddenly increased ICP in the development of intraocular hemorrhage in Terson syndrome, and concluded that rinsing during ETV should be performed under no pressure with a patent outflow channel. **Reviewer’s Comments:** Not only does this article remind us of the importance of avoiding rinsing under pressure during ETV to help prevent the occurrence of iatrogenic Terson syndrome, but it also stresses the importance of having a vigilant team. On the other hand, this article also emphasizes the importance of error-reporting as a learning tool. (Reviewer-Ziad A. Hage, MD).
Women with brain tumors who are married for a short period of time are at greater risk for divorce and subsequent poorer outcome.

**Background:** Impairments caused by brain tumors may disrupt marital relationships with subsequent impacts on treatment and patient outcome. Female gender may be associated with an increased frequency of marital discord after diagnosis of brain tumor.

**Objective:** To investigate the impact of female gender on marital discord in brain tumor patients and how divorce alters treatment and treatment outcomes.

**Design:** Multi-institutional prospective cohort study.

**Methods:** Patients in neuro-oncology, general oncology, and multiple sclerosis clinics were prospectively enrolled for data collection. Partner abandonment was defined as divorce or permanent separation lasting at least 3 months. Marital status at study conclusion, gender, age, Karnofsky performance score, tumor location, education, and setting of residence were assessed. The effects of covariates on divorce were assessed by logistic regression analysis, and the effects of covariates plus marital status on survival were assessed by proportional hazards analysis.

**Results:** 214 patients with malignant primary brain tumor, 193 with cancer, and 91 with multiple sclerosis had a divorce/separation rate of 11.6% (60 patients) at a median of 6 months. Overall, 88.0% of these events involved women patients, and female gender was significantly associated with divorce/separation (20.8% of women, 2.9% of men). In the cohort with brain tumors only, female gender was the strongest predictor of marital disruption. Older age and length of marriage (27.4 vs 14.4 married years) significantly correlated with continuation of the marriage. Outcome was worse in separated/divorced patients, with abandoned patients using antidepressant medications more, participating in clinical trials less, being hospitalized more, having salvage therapies less, and completing radiation therapy less. Patient abandonment did not affect survival, but abandoned patients were younger.

**Conclusions:** Female gender increases the risk of divorce or separation in patients with brain tumors. Because treatment and quality of life is negatively affected by marital disruption, medical providers should be sensitive to marital discord, particularly in young women patients who have been married for a short time.

**Reviewer's Comments:** The authors provide convincing data that women with brain tumors have increased risk for disruption of their marriages and that the disruption negatively impacts their treatment. An effect on survival is not noted because, as the authors point out, these patients tend to be younger, which in and of itself is a positive prognostic characteristic. The study did not compare women of similar ages with and without marital disruption for survival, but one would expect a survival disadvantage for a divorced woman. The importance of these data is that we need to be cognizant of our patients’ social situations, as these issues impact treatments and treatment outcomes. Recognition of marital discord during follow-up appointments for patients with brain tumors, particularly young women, may lead to interventions which can improve quality of life and outcome. (Reviewer-N. Scott Litofsky, MD).

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Keywords: Female Gender, Marital Status, Divorce, Cancer, Multiple Sclerosis, Brain Tumor

Print Tag: Refer to original journal article
Hypertonic Saline May Become Agent of Choice in Reducing ICP

The Use of 23.4% Hypertonic Saline for the Management of Elevated Intracranial Pressure in Patients With Severe Traumatic Brain Injury: A Pilot Study.
Kerwin AJ, Schinco MA, et al:
J Trauma 2009; 67 (August): 277-282

23.4% hypertonic saline is effective at lowering elevated intracranial pressure, perhaps better than mannitol.

Background: Patients with severe brain injury frequently succumb to evolution of uncontrollable elevated intracranial pressure (ICP). Hypertonic saline has been effectively used in experimental models, but clinical studies have been sparse.

Objective: To determine if 23.4% hypertonic saline is more effective than standard therapy with mannitol in treating intracranial hypertension.

Design: Single-institution retrospective study.

Methods: Patients were admitted to the intensive care unit after severe traumatic brain injury (TBI). ICP, cerebral perfusion pressure (CPP), and reduction of ICP after either mannitol or 23.4% hypertonic saline was determined from nursing flow sheets. ICP monitoring need was determined by the attending neurosurgeon. Normocarbia (pCO₂ between 35 and 40 mm Hg) and oxygenation pO₂ >60 mm Hg was maintained. CPP was maintained at >60 mm Hg with inotropic agents as needed. If ICP exceeded 20 mm Hg for >5 minutes, patients received either mannitol 15 to 75 grams or 23.4% hypertonic saline 30 mL, depending on the choice of neurosurgeon and trauma surgeon after discussion. Refractory ICP was treated with pentobarbital-induced coma and/or decompressive craniectomy at the discretion of the neurosurgeon.

Results: 22 patients received either hypertonic saline (108 doses) or mannitol (102 doses) to treat elevated ICP. Mean admission Injury Severity Score was 28.1 and mean Glasgow Coma Scale score was 6.9. Mean ICP for patients treated with hypertonic saline was significantly greater at 30.7 mm Hg than 28.3 mm Hg for those treated with mannitol. CPP was not significantly different between groups. ICP reduction was significantly greater after hypertonic saline than mannitol (9.3 mm Hg vs 6.4 mm Hg). More patients treated with hypertonic saline had ICP reductions >10 mm Hg, and more patients treated with mannitol had ICP reductions <5 mm Hg. No ICP reduction response was noted more frequently after mannitol doses (26 vs 8 hypertonic saline doses).

Conclusions: 23.4% hypertonic saline is effective in reducing elevated ICP after TBI.

Reviewer’s Comments: This study indicates that 23.4% hypertonic saline may be a reasonable option to reduce elevated intracranial pressure in patients with traumatic brain injury. The study has a number of shortcomings: treatments are not standardized; indications for ICP monitoring are not specified; brain injuries are not specified; only a small number of patients are included; patients are not randomized; and patients receive both hypertonic saline and mannitol. Safety of hypertonic saline is not assessed, nor is the relationship between ICP reduction and clinical outcome. As a pilot study, these deficiencies are not unexpected. Additional studies should assess safety and efficacy more rigorously. I suspect we will find that hypertonic saline will be another option available in managing ICP elevations in patients with severe brain injury. (Reviewer-N. Scott Litofsky, MD).

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Keywords: Hypertonic Saline, Severe Traumatic Brain Injury, Intracranial Pressure, Mannitol

Print Tag: Refer to original journal article
Vertebroplasty is not effective for treating chronic pain from compression fractures.

**Objective:** To determine the effectiveness of vertebroplasty for treating painful osteoporotic fractures.

**Design:** Randomized controlled trial (RCT).

**Participants/Methods:** 468 patients were screened and 78 patients enrolled with back pain (no more than 12 months duration) and 1 or 2 recent vertebral compression fractures confirmed by MRI. Patients were stratified according to the duration of symptoms (<6 weeks or ≥6 weeks). Patients were randomly assigned to receive vertebroplasty or a sham procedure without the injection of cement into the affected vertebral bodies. The primary outcome measure was overall back pain (on a scale of 0 to 10, with 10 being the maximum). Outcome was assessed at 1 week and 1, 3, and 6 months.

**Results:** Of the 78 patients enrolled, 71 (91%) completed 6-month follow-up. Two thirds of the randomized patients had chronic pain (≥6 weeks of symptoms). Both the placebo group and the vertebroplasty group improved significantly at each assessment. At 3 months, the vertebroplasty group had a 2.6-point reduction in back pain compared to a 1.9-point reduction in pain in the control group. The difference was not significant. There were no significant differences in quality of life between the groups. There were no differences between the rates of new compression fractures over the 6-month follow-up period.

**Conclusions:** Vertebroplasty did not differ from a sham procedure in patients with painful osteoporotic compression vertebral fractures followed for 6 months after the procedure.

**Reviewer's Comments:** The authors are to be congratulated for performing an RCT designed to assess the utility of vertebroplasty in treating painful osteoporotic fractures. This trial found that vertebroplasty did not differ from a sham procedure in treating patients with painful osteoporotic fractures. This result is surprising and contradicts a previous RCT, which demonstrated a benefit from vertebroplasty. There are many concerns about the methodology used in this trial. First, a large number (141) of eligible patients declined to participate suggesting that those patients who were more likely to benefit were excluded from randomization. Second, the inclusion of patients with chronic back pain (≥6 weeks) biases the study toward a negative result. Only a third of patients had symptoms for <6 weeks. The study may not have been powered to detect differences in this smaller cohort of 25 patients. Third, since the utilization of narcotic pain medications was not recorded during the 6-month follow-up period, it might have been difficult to detect differences in the 2 groups if narcotics were used liberally. The study does raise important questions regarding the utilization of vertebroplasty. One lesson from the trial might be that chronic pain from a vertebral fracture is unlikely to benefit from vertebroplasty. The study was biased in a way that favored the inclusion of chronic fractures by including patients who had pain for up to a year. (Reviewer-Zoher Ghogawala, MD).

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Keywords: Vertebroplasty, Osteoporotic Vertebral Fractures

Print Tag: Refer to original journal article
Objective: To evaluate the risk of repeat treatment for recurrent or residual aneurysms after initial endovascular coiling. 

Design/Methods: This study utilized data from 8 institutions in the United States and Puerto Rico. The authors described prospectively recorded data in 311 patients in whom coiled intracranial aneurysms were retreated a total of 352 times. The data were analyzed with respect to procedure-related morbidity and complications, defined as major or minor (modified Rankin scale score < or ≥3) and temporary or permanent (< or >30 days). 

Results: Overall mortality was 0.96% per patient, while disability rates were 0.32% per patient for permanent or temporary major disability. Minor disability was reported to be either 1.29% (permanent) or 1.61% (temporary). The overall risk for death or permanent major disability was 1.13% per procedure and 1.28% per patient.

Conclusions: The complication rate of retreatment in this study for patients with recurrent aneurysms after initial coiling is lower than that of initial treatment. This discovery must be considered in counseling patients regarding treatment options and risks of recurrence.

Reviewer's Comments: One issue in endovascular management of intracranial aneurysms continues to be the durability of coil-obliteration and the morbidity of subsequent retreatment. A clear downside to endovascular treatment when compared to open surgical management is the risk of recurrence, which requires long-term close follow-up, as well as the possibility that a repeat procedure may be required. The reviewed study attempts to quantify the risks of retreatment when evaluating prospectively treated aneurysms. The study indicates that the risk of retreatment for recurrent aneurysms is very low, and in and of itself, is important information when counseling patients regarding their treatment options. It is unclear what criteria the study members used when deciding which aneurysms were retreated, as those aneurysms in which an unsatisfactory initial result may have been obtained may have been merely followed rather than retreated, leading to selection bias in the study results. It is also unclear what the additive risk of treatment is for aneurysms that are considered for endovascular treatment when one includes data from such an analysis. This “overall risk” would be very important to obtain, as it allows a more accurate comparison to surgical treatment. Nevertheless, this is an important study with important conclusions. (Reviewer-Nicholas C. Bambakidis, MD).
Gamma knife stereotactic radiosurgery is an effective treatment option for younger patients with acoustic schwannomas.

**Objective:** To describe tumor response and clinical outcomes in a cohort of younger patients treated with stereotactic radiosurgery (SRS) for small acoustic neuromas.

**Methods:** 55 patients were included in this study. All patients were aged ≤40 years and were treated with gamma knife radiosurgery. Minimum follow-up was for 4 years. A total of 13 patients had undergone previous surgical resection. Tumors were small, with an average volume of 1.7 mm³. The median radiation dose at the tumor margin was 13.0 Gy (range, 11 to 20 Gy).

**Results:** Median follow-up was 5.3 years, with a range of 4 to 20 years. Overall tumor control rate was 96%, with 2 patients requiring secondary treatment with SRS. Hearing preservation, defined as no change of pre-treatment Gardner-Robertson hearing class, was obtained in 93% of patients at 3 years. This number was calculated to be 87% at both 5 and 10 years. Serviceable hearing was maintained in 93.0% of patients at 10 years duration. Facial nerve function was maintained in 98.2% of patients, and there were no reported complications of radiation treatment.

**Conclusions:** Gamma knife stereotactic radiosurgery is an effective treatment option for younger patients with acoustic schwannomas.

**Reviewer's Comments:** There are many good options for the treatment of acoustic neuromas. These include surgical resection, SRS, stereotactic radiation therapy, and observation. In younger patients with smaller tumors, surgical resection is often recommended in high-volume centers because of low rates of surgical morbidity, the ability to offer curative treatment, and concerns about the long-term risks of radiation therapy. In the present study, the authors report an extremely low complication rate with excellent rates of tumor control similar to other reports of gamma knife SRS in older patients. Unfortunately, the median follow-up of 5.3 years fails to answer the primary concern of such patients; namely, what is the long-term efficacy of SRS in treating tumors in patients who may have a life expectancy >40 years? Clearly, there will always be a small subset of patients who will suffer unexpected surgical complications despite superb surgical technique in experienced surgical hands. However, this must be balanced against the option of curative therapy without long-term risk in the great majority of patients who have an excellent surgical result, particularly in cases where small tumors are resected wherein cranial nerve injury is low and hearing preservation is a realistic goal. In my opinion, surgical resection remains the treatment of choice in younger patients with acoustic tumors of any size, with SRS reserved as a treatment option. (Reviewer-Nicholas C. Bambakidis, MD).

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Keywords: Gamma Knife, Vestibular Schwannoma, Stereotactic Radiosurgery

Print Tag: Refer to original journal article
Standard Coordinates Developed to Target the Subcallosal Cingulate Gyrus

Deep Brain Stimulation of the Subcallosal Cingulate Gyrus for Depression: Anatomical Location of Active Contacts in Clinical Responders and a Suggested Guideline for Targeting.

Hamani C, Mayberg H, et al:

J Neurosurg 2009; May 29 (epub ahead of print):

Standardized stereotaxic coordinates for placement of a deep brain stimulation electrode in the subcallosal cingulated gyrus for the treatment of depression allow better patient comparison.

Background: Early results of deep brain stimulation (DBS) of the subcallosal cingulate gyrus (SCG) have been associated with a marked reduction of the depressive symptoms in selected patients. Until now, the placement of the electrodes was based on anatomical coordinates as seen on MRI. Based on an association between successful and unsuccessful clinical response, the authors present stereotaxic coordinates, allowing standardization of the implantation site.

Objective: To determine the stereotaxic coordinates for effective stimulation of the SGC in patients with major depressive disorder.

Design: Retrospective study.

Participants/Methods: The post-implantation position of the intracerebral quadripolar electrodes was compared in 20 patients. All patients were followed at least 1 year after implantation. Selection criteria included presence of major depression >1 year, a Hamilton depression scale score (HAMD-17) >20, and failure to respond to comprehensive treatment. The authors considered that a significant response to DBS was achieved when HAMD-17 scores were reduced by >50% at the 1-year time point. To compare the position of the electrode in the SCG, the authors used 3D spoiled gradient-recalled acquisition and T2 axial MR imaging. Coronal and sagittal planes were then reconstructed parallel to a line drawn through the anterior and posterior commissures (AC-PC) using software. The center of the sphere-shaped artifacts was concluded to be the center of each 4 contacts on the electrodes. The exact position of each contact was drawn on sagittal MRI images. Briefly, the x line went from the anterior commissure to the anterior part of the genu of the corpus callosum (CC). The y line went from the most ventral point of the genu of the CC to the base of the frontal lobe. The z line went from the cortical surface to the white matter.

Results: 11 of 20 patients achieved a significant reduction of their HAMD-17 scores at 1 year. The responder's electrode was only slightly more ventral by 1 to 2 mm. The optimal coordinates are 73.2 ± 7.7 percentile on the x line, 26.2 ± 13.8 percentile on the y line, and 5.6 ± 1.3 on the z line (ie, at the junction of the gray and white matter).

Conclusions: Standard coordinates have now been developed to target the SCG.

Reviewer's Comments: The data presented by Dr Lozano and his colleagues will allow standardizing electrode placement and comparison between different centers. The lack of a greater difference in electrode placement between responder and non-responders is puzzling. Given that the electrodes are 1.27 mm in diameter and each contact is 1.5 mm in length, further optimization of placement is unlikely. The challenge will be to better predict who is a non-responder prior to implantation. (Reviewer-Luc Jasmin, MD).

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Keywords: Depression, Functional Neurosurgery, Deep Brain Stimulation

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Parents need to be made aware that their kids discharged with a diagnosis of "mild" TBI may have symptoms for a prolonged period of time and will require close follow-up.

Background: The annual number of children age <15 years who come to the ED because of traumatic brain injuries (TBI) is about 500,000. Fortunately, 80% to 90% can be classified as mild. However, there is growing concern that even children with mild TBIs may have postconcussive symptoms (PCS). Much of the investigations in the past are afflicted with methodological shortcomings and fail to provide a conclusive answer.

Objective: To determine whether children with mild TBI, but with clinical features suggestive of brain injury, have different postconcussive trajectories compared to controls.

Design: Prospective longitudinal cohort study.

Participants: 186 TBI patients (range, 8 to 15 years; mean age, 11.96 years) and 99 controls with orthopedic injuries.

Methods: A mild TBI was defined as blunt head trauma with loss of consciousness <30 minutes, Glasgow Coma Scale Score of 13 or 14 or at least 2 concussive symptoms like amnesia, vomiting, dizziness, or disorientation. Parents prepared a preinjury assessment of their children and they reported current PCS at the index visit and at 1, 3, and 12 months after injury (eg, headaches, depression, irritability, difficulty seeing, personality changes, dizziness, attention problems, forgetfulness). MRIs were obtained.

Results: 4 longitudinal trajectories were identified: no PCS (n = 64%); moderate persistent PCS (12%); high acute/resolved PCS (15%); and high acute/persistent PCS (9%). Children with ≤3 acute clinical features were "low severity" and children with ≥4 were classified as "high severity." Persistent amnesia, disorientation, and other mental status changes predicted a greater possibility that the child would fall into the high acute/resolved PCS group. Loss of consciousness, dizziness, disorientation, and other mental status changes predicted a greater possibility that the child would fall into the high acute/persistent PCS group. Those in the higher severity group were more likely to belong to the high acute/persistent group than were those in the low severity group (14% vs 6%). MRI abnormalities in each of the groups were not found to be predictive.

Conclusions: Children with mild TBI are more likely than controls to sustain either transient or persistent PCS in the first year after injury. The more severe the presentation, the greater the likelihood the PCS will be persistent.

Reviewer's Comments: Evidently, mild TBI in kids is a misnomer. While the authors advocate greater and more meaningful research into this enigma, this study serves to remind us that while the CT may be negative and we tell mom and dad their kid will be alright after falling out of the tree, perhaps we should be more articulate about what to look for down the line and whom to see for follow-up. (Reviewer-Paul P. Rega, MD).
More females than males present with altered mental status as part of their constellation of stroke/TIA findings.

**Background:** As noted in a previous review, women with stroke receive delays in care and are less likely to receive thrombolysis.

**Objective:** To define potential gender differences in the prevalence of stroke symptoms that could explain differences in care.

**Design/Participants:** Prospective study of adult stroke patients presenting to a single academic hospital over a 2-year period.

**Methods:** Patients were interviewed by the investigators as soon as possible following admission or ED stay to minimize recall bias. For patients unable to communicate, a proxy was interviewed if available. All interviews were scripted. The main end point was the dichotomous variable of nontraditional stroke/transient ischemic attack (TIA) symptoms versus none. Traditional symptoms were based on American Stroke Association guidelines and included hemi-body numbness, hemiparesis, diplopia or other visual disturbances, aphasia, dysarthria, discoordination/ataxia, facial weakness, and vertigo. Nontraditional symptoms were classified after Labiche et al (*Ann Emerg Med*, 2002; 40:453-460) and included pain (face or hemi-body), mental status change (disorientation, confusion, or loss of consciousness), lightheadedness, headache, general nonspecific neurological symptoms (nausea, hiccups, nonfocal weakness), and non-neurological symptoms (chest pain, palpitations, shortness of breath). Headache was considered a nontraditional, non-pain symptom in this study.

**Results:** 461 cases were enrolled (48.6% women; median age, 67 years). Slightly more women than men reported at least 1 nontraditional stroke/TIA symptom (51.8% vs 43.9%; \( P = 0.09 \)), and the odds of reporting at least 1 nontraditional stroke/TIA symptom were 1.42 times (95% CI, 0.97 to 2.06) greater in women than in men. However, the single most prevalent nontraditional symptom was mental status change, and this was present in significantly more women than men (23.2% vs 15.2%; \( P = 0.03 \)).

**Conclusions:** Although a high prevalence of nontraditional stroke/TIA symptoms are reported by both genders, women are more likely to report nontraditional symptoms, particularly altered mental status, compared with men.

**Reviewer's Comments:** As discussed previously, Gargano et al reported that female stroke patients were less likely to present with classical AHA warning signs of stroke, but when all variables were accounted for, these generic "atypical" presentations were not really defined other than what they were not, nor did they appear to explain differences in care. Here, albeit with ASA criteria, investigators actually speak with patients to define what the atypical signs might be. Will it help to rectify the care disparity? It might help a patient here or there. I note that 366 cases in this study had valid prehospital data. Median time from symptom onset to hospital arrival was 25% longer among women (\( P = 0.05 \)). Time to arrival was not associated with traditional or nontraditional symptoms. Demographics suggest that older women are more likely to be socially isolated with a restricted safety net and less access to resources. (Reviewer-Steven B. Abrams, MD).

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Keywords: Acute Stroke Symptoms, Gender Differences

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