NEUROLOGY

COMMENTARY

Two studies are reviewed, each representing a clinical trial addressing an important therapeutic intervention.

The Saline versus Albumin Fluid Evaluation (SAFE) study investigated the benefit of fluid resuscitation with saline or albumin in patients with traumatic brain injury. Resuscitation fluids are an important component of management in traumatic brain injury patients. There exists a longstanding controversy whether saline is superior to albumin and vice versa. The report highlighted here is a post hoc follow-up of patients enrolled in SAFE, which was a randomized, controlled trial evaluating efficacy of saline versus albumin in ICU patients. The findings are important and have strong clinical and practice implications. Mortality was significantly higher in albumin-treated patients with severe traumatic brain injury (3-8 on Glasgow Coma Scale). The difference was not significant in patients with GCS 9-12.

Bell's palsy is common. The use of steroids for Bell's palsy has been prevalent among physicians for decades. One recent study suggested that a combination of valacyclovir and prednisolone was superior to prednisolone alone. Due to methodological flaws in this study, controversy remained. This study is a well- designed randomized, controlled trial with more than 90% follow-up. Complete facial nerve recovery was seen in 85% placebo-treated patients, 96% patients treated with prednisolone alone, 78% patients treated with acyclovir alone, and 92% patients treated with combination prednisolone and acyclovir. The findings are not only clinically relevant but also have economic impact given the high cost of acyclovir.

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N Engl J Med. 2007 Aug 30;357(9):874-84.

SAFE Study Investigators; Australian and New Zealand Intensive Care Society Clinical Trials Group; Australian Red Cross Blood Service; George Institute for International Health, Myburgh J, Cooper J, Finfer S, Bellomo R, Norton R, Bishop N, Kai Lo S,Vallance S.

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SALINE OR ALBUMIN FOR FLUID RESUSCITATION IN PATIENTS WITH TRA UMATIC BRAIN INJURY

BACKGROUND: The Saline versus Albumin Fluid Evaluation study suggested that patients with traumatic brain injury resuscitated with albumin had a higher mortality rate than those resuscitated with saline. We conducted a post hoc follow-up study of patients with traumatic brain injury who were enrolled in the study. METHODS: For patients with traumatic brain injury (i.e., a history of trauma, evidence of head trauma on a computed tomographic [CT] scan, and a score of < or =13 on the Glasgow Coma Scale [GCS]), we recorded baseline characteristics from case-report forms, clinical records, and CT scans and determined vital status and functional neurologic outcomes 24 months after randomization. RESULTS: We followed 460 patients, of whom 231 (50.2%) received albumin and 229 (49.8%) received saline. The subgroup of patients with GCS scores of 3 to 8 were classified as having severe brain injury (160 [69.3%] in the albumin group and 158 [69.0%] in the saline group). Demographic characteristics and indexes of severity of brain injury were similar at baseline. At 24 months,71 of 214 patients in the albumin group (33.2%) had died, as compared with 42 of 206 in the saline group (20.4%) (relative risk, 1.63; 95% confidence interval [CI], 1.17 to 2.26; P=0.003). Among patients with severe brain injury, 61 of 146 patients in the albumin group (41.8%) died, as compared with 32 of 144 in the saline group (22.2%) (relative risk, 1.88; 95% CI, 1.31 to 2.70; P<0.001); among patients with GCS scores of 9 to 12, death occurred in 8 of 50 patients in the albumin group (16.0%) and 8 of 37 in the saline group (21.6%) (relative risk, 0.74; 95% CI, 0.31 to 1.79; P=0.50). CONCLUSIONS: In this post hoc study of critically ill patients with traumatic brain injury, fluid resuscitation with albumin was associated with higher mortality rates than was resuscitation with saline.

N Engl J Med. 2007 Oct 18;357(16):1598-607.

Sullivan FM, Swan IR, Donnan PT, Morrison JM, Smith BH, McKinstry B, Davenport RJ, Vale LD, Clarkson JE, Hammersley V, Hayavi S, McAteer A, Stewart K, Daly F.

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EARLY TREATMENT WITH PREDNISOLONE OR ACYCLOVIR IN BELL'S PALSY

BACKGROUND: Corticosteroids and antiviral agents are widely used to treat the early stages of idiopathic facial paralysis (i.e., Bell's palsy), but their effectiveness is uncertain. METHODS: We conducted a double-blind, placebo-controlled, randomized, factorial trial involving patients with Bell's palsy who were recruited within 72 hours after the onset of symptoms. Patients were randomly assigned to receive 10 days of treatment with prednisolone, acyclovir, both agents, or placebo. The primary outcome was recovery of facial function, as rated on the House-Brackmann scale. Secondary outcomes included quality of life, appearance, and pain. RESULTS: Final outcomes were assessed for 496 of 551 patients who underwent randomization. At 3 months, the proportions of patients who had recovered facial function were 83.0% in the prednisolone group as compared with 63.6% among patients who did not receive prednisolone P<0.001) and 71.2% in the acyclovir group as compared with 75.7% among patients who did not receive acyclovir (adjusted P=0.50). After 9 months, these proportions were 94.4% for prednisolone and 81.6% for no prednisolone (P<0.001) and 85.4% for acyclovir and 90.8% for no acyclovir (adjusted P=0.10). For patients treated with both drugs, the proportions were 79.7% at 3 months (P<0.001) and 92.7% at 9 months (P<0.001). There were no clinically significant differences between the treatment groups in secondary outcomes. There were no serious adverse events in any group. CONCLUSIONS: In patients with Bell's palsy, early treatment with prednisolone significantly improves the chances of complete recovery at 3 and 9 months. There is no evidence of a benefit of acyclovir given alone or an additional benefit of acyclovir in combination with prednisolone.

NEUROSURGERY

COMMENTARY

The first selected article is an outstanding review of the treatment of traumatic brain injury. The authors provide a balanced and evidence-based approach. There is thoughtful discussion of practical problems and new protocols such as the role of intracranial pressure monitoring and use of hypertonic saline, as well as indications and outcomes of decompressive surgeries.

Vasospasm is the most feared complication of subarachnoid hemorrhage (SAH), especially in patients with poor clinical grades. Tseng et al have studied the role of hypertonic saline in enhancing cerebral blood flow in these poor grade patients. They find that bolus systemic hypertonic saline therapy may be used for reversal of cerebral ischemia to improve cerebral perfusion in this patient population.

Prescribing prophylactic anti epileptic drugs (AEDs) in patients with SAH is a common practice. Rosengart and colleagues have questioned this practice by performing a careful analysis of four relevant randomized, double blind, placebo controlled trials. The most important finding was that AED usage appeared to be deleterious; it was associated with worse outcome at three months, cerebral vasospasm, neurological deterioration, and cerebral infarction, as well as elevated temperature during hospitalization.

There is an increased tendency of referring patients with complex posterior circulation aneurysms for endovascular coiling due to the morbidity associated with surgical clipping of these deep seated lesions. Krisht etal have presented their experience in treating 50 high complexity basilar apex aneurysms via modern cranial base micro vascular techniques. Forty nine aneurysms (98%) were successfully clipped. Perforator injuries occurred in only two patients. At 6-month follow-up, the Rankin scores were 0 to 2 in 92% of patients. This study demonstrates that technical difficulties of a particular treatment are not an argument for choosing an “easier” method of treatment, such as - in this case - the endovascular route.

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Neurosurgery 61[SHC Suppl 1]: SHC-203-SHC-221, 2007

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SURGERY OF CEREBRAL TRAUMA AND AS SOCIATED CRITICAL CARE

The last 30 years have been both exciting and frustrating for those in the field of traumatic brain injury (TBI). Much has been learned, but no new treatment has been shown to improve patient outcomes despite the execution of many clinical trials. The overall incidence of TBI has decreased, probably because of intensive efforts toward prevention and education. Rigorous assessment of available research has produced several evidence-based guidelines for the management of neurotrauma patients. The creation of organized emergency medical services systems in many regions has improved prehospital care. Computed tomographic scans have become the gold standard for obtaining immediate images of patients with TBI, and ongoing advances in visualizing cerebral metabolism continue to be remarkable. The major current question regarding surgical treatment for TBI involves the role of decompressive craniectomy, an operation that first fell out of favor and has since (in the last three decades) enjoyed a resurgence of interest. Growing interest in the intensive care management of TBI patients helped to establish the new field of neurocritical care. Prophylactic hyperventilation is no longer recommended, and earlier recommendations for aggressive elevation of blood pressure have been softened to endorsement of a cerebral perfusion pressure of 60 mmHg. Recombinant factor VIIa is increasingly used for minimizing complications related to

coagulopathy. Intracranial pressure monitoring is now recommended for the majority of TBI patients. At present, available technologies allow measurement of other aspects of cerebral metabolism including cerebral blood flow, brain oxygen tension, biochemistry, and electrical activity. Therapeutic interventions that are growing in popularity or are presently under investigation include administration of hypertonic saline, hyperoxygenation, decompressive craniectomy, and hypothermia. Rehabilitation has become accepted as an important part of the TBI recovery process, and additional work is needed to identify optimal interventions in this area. Socioeconomic factors will play a growing role in our treatment of TBI patients. Although much progress has been made in the last 30 years, the challenge now is to find ways to translate that progress into improved care and outcomes for TBI patients.

J Neurosurg 107:274-282, 2007

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ENHANCEMENT OF CEREBRAL BLOOD FLOW USING SYSTEMIC HYPERTONIC SALINE THER APY IMPROVES OUTCOME IN PATIENTS WITH POOR-GRADE SPONTANEOUS SUBAR ACHNOID HEMORRHAGE

OBJECT: Systemic administration of 23.5% hypertonic saline enhances cerebral blood flow (CBF) in patients with poor-grade spontaneous subarachnoid hemorrhage (SAH). Whether the increment of change in CBF correlates with changes in autoregulation of CBF or outcome at discharge remains unknown. METHODS: Thirty-five patients with poor-grade spontaneous SAH received 2 ml/kg 23.5% hypertonic saline intravenously, and they underwent bedside transcranial Doppler (TCD) ultrasonography and intracranial pressure (ICP) monitoring. Seventeen of them underwent Xe-enhanced computed tomography (CT) scanning for measuring CBF. Outcome was assessed using the modified Rankin Scale (mRS) at discharge from the hospital. The data were analyzed using repeated-measurement analysis of variance and Dunnett correction. A comparison was made between patients with favorable and unfavorable outcomes using multivariate logistic regression. RESULTS: The authors observed a maximum increase in blood pressure by 10.3% ($p < 0.05$) and cerebral perfusion pressure (CPP) by 21.2% ($p < 0.01$) at 30 minutes, followed by a maximum decrease in ICP by 93.1% ($p < 0.01$) at 60 minutes. Changes in ICP and CPP persisted for longer than 180 and 90 minutes, respectively. The results of TCD ultrasonography showed that the baseline autoregulation was impaired on the ipsilateral side of ruptured aneurysm, and increments in flow velocities were higher and lasted longer on the contralateral side (48.75% compared with 31.96% [$p = 0.045$] and 180 minutes compared with 90 minutes [$p < 0.05$], respectively). The autoregulation was briefly impaired on the contralateral side during the infusion. A dose-dependent effect of CBF increments on favorable outcome was seen on Xe-CT scans (mRS Score 1-3, odds ratio 1.27 per 1 ml/100 g tissue x min, $p = 0.045$). CONCLUSIONS: Bolus systemic hypertonic saline therapy may be used for reversal of cerebral ischemia to normal perfusion in patients with poor-grade SAH.

J Neurosurg 107:253-260, 2007

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OUTCOME IN PATIENTS WITH SUBARACHNOID HEMORRHAGE TREATED WITH ANTIEPILEPTIC DRUGS

OBJECT: Prophylactic use of antiepileptic drugs (AEDs) in patients admitted with aneurysmal subarachnoid hemorrhage (SAH) is common practice; however, the impact of this treatment strategy on in-hospital complications and outcome has not been systematically studied. The goal in this study was twofold: first, to describe the prescribing pattern for AEDs in an international study population; and second, to delineate the impact of AEDs on in-hospital complications and outcome in patients with SAH. METHODS: The authors examined data collected in 3552 patients with SAH who were entered into four prospective, randomized, double-blind, placebo-controlled trials conducted in 162 neurosurgical centers and 21 countries between 1991 and 1997. The prevalence of AED use was assessed by study country and center. The impact of AEDs on in-hospital complications and outcome was evaluated using conditional logistic regressions comparing treated and untreated patients within the same study center. RESULTS: Antiepileptic drugs were used in 65.1% of patients and the

prescribing pattern was mainly dependent on the treating physicians: the prevalence of AED use varied dramatically across study country and center (intraclass correlation coefficients 0.22 and 0.66, respectively [p < 0.001]). Other predictors included younger age, worse neurological grade, and lower systolic blood pressure on admission. After adjustment, patients treated with AEDs had odds ratios of 1.56 (95% confidence interval [CI] 1.16-2.10; p = 0.003) for worse outcome based on the Glasgow Outcome Scale; 1.87 (95% CI 1.43-2.44; p < 0.001) for cerebral vasospasm; 1.61 (95% CI 1.25-2.06; p < 0.001) for neurological deterioration; 1.33 (95% CI 1.01-1.74; p = 0.04) for cerebral infarction; and 1.36 (95% CI 1.03-1.80; p = 0.03) for elevated temperature during hospitalization. CONCLUSIONS: Prophylactic AED treatment in patients with aneurysmal SAH is common, follows an arbitrary prescribing pattern, and is associated with increased in-hospital complications and worse outcome

Neurosurgery. 2007 Feb;60(2):242-50;

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RESULTS OF MICROSURGICAL CLIPPING OF 50 HIGH COMPLEXITY BASILAR APEX ANEURYSMS

OBJECTIVE: Complex basilar aneurysms (large size, wide base, low bifurcation, and dysmorphic posteriorly projecting domes) frequently fail endovascular treatment. We report our experience using the pretemporal transzygomatic transcavernous approach with 50 complex basilar aneurysms. METHODS: Using the pretemporal transcavernous route, opening the occulomotor trigone, and removing the anterior clinoid and the posterior clinoid when necessary, a wide exposure of the interpeduncular fossa is achieved. Temporary clips are applied to a perforator-free zone of the basilar trunk, proximal to the superior cerebellar artery. Complexity criteria in the 50 aneurysms included large or giant size in 27 patients, wide dysmorphic base in 18 patients, low bifurcation in 21 patients, posteriorly projecting dome in 11 patients, and dolichoectasia of the apex in three patients. RESULTS: Twenty-five patients presented with subarachnoid hemorrhage. There were 14 men and 36 women between the ages of 32 and 76 years (mean, 52.2 yr). Forty-nine aneurysms (98%) were successfully clipped. There was no procedure-related mortality. Two patients died (one from delayed bowel ischemia and one from a vasospasm-related complication). There were three ischemia-related events, two of which were procedure-related (medial thalamic lacunar infarct, superior cerebellar distribution ischemia) and one which was a third distal middle cerebral cardiac embolus after stopping Coumadin (DuPont Pharmaceuticals, Wilmington, DE) for atrial fibrillation. Transient partial or complete occulomotor palsies occurred in all patients with full recovery as the rule, except in one patient. At discharge, Glascow Outcome Scale scores were 4 or 5 in 88% of the patients. At the 6-month follow-up examination, Rankin Outcome Scale scores were 0 to 2 in 92% of the patients. CONCLUSION: Our experience reintroduces microsurgery as a safe and more durable treatment option for the management of complex basilar apex aneurysms that tend to have a higher rate of failure with endovascular therapy.

NEURORADIOLOGY

COMMENTARY

Studies selected for this issue reflect some of the daily challenges faced by neuroradiologists. The first report (Kim et al) relates to an increasingly recognized entity, metronidazole-induced encephalopathy. Given the widespread and unregulated use of this drug in Pakistan, this condition is likely to be more common than we realize.

The next report is from R.K.Gupta's group in Lucknow. These prolific researchers have made fundamental advances in applying MR imaging techniques to infections of the CNS. This article reports radiological differentiation between the various etiological agents leading to brain abscess. Infections of the CNS are difficult to treat and any help that imaging may provide is likely to be very useful.

The role of inflammation has long been postulated in the development of atherosclerosis and its complications. Gröschel et al found that pre-procedural C-reactive protein level is a predictor of complications in patients undergoing carotid artery stenting. Although the number of patients (n=34 with elevated CRP) are relatively small, this test may be a useful addition to the pre-procedural workup. It also underscores the role of aspirin and other non-steroidal anti-inflammatory drugs in the overall management of these patients, not only for their anti-platelet properties but also their anti-inflammatory actions.

Although Colen et al contend in their article that “CTA showed excellent diagnostic performance for aneurysm detection,” 49 of 284 aneurysms were missed in their study. Even though the data dates back to the pre 64-slice era with scans done on 4, 8 or 16 slice machines, it is safe to say that catheter angiography remains the gold standard for detection of aneurysms.

With the advent of multi-detector CT, radiation dose is becoming a critical issue. The paper from Mulkens et al highlights the fact that a good deal of radiation dose is given to patients to make the images look 'pretty'. It may be possible to substantially cut the dose with some reduction in image quality, without compromising on the diagnostic value of these images.

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American Journal of Neuroradiology 2007;28:1652-1658

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MR IMAGING OF METRONIDAZOLE-INDUCED ENCEPHALOPA THY: LESION DISTRIBUTION AND DIFFUSION- WEIGHTED IMAGING FINDINGS

BACKGROUND AND PURPOSE: MR imaging features of metronidazole-induced encephalopathy (MIE) have not been fully established. This study was undertaken to determine the topographic distributions and diffusion-weighted imaging (DWI) findings of MIE. MATERIALS AND METHODS: We retrospectively evaluated the initial MR images (n = 7), including DWI (n = 5), and follow-up MR images (n = 4) after drug discontinuation in 7 patents with clinically diagnosed MIE. The topographic distributions of lesions were evaluated on MR images, and DWI signal intensities and apparent diffusion coefficient (ADC) values of the lesions were assessed. RESULTS: MR images demonstrated bilateral symmetric T2 hyperintense lesions in the cerebellar dentate nucleus (n = 7), midbrain (n = 7), dorsal pons (n = 6), medulla (n = 4), corpus callosum (n = 4), and cerebral white matter (n = 1). Brain stem lesions involved the following: tectum (n = 5), tegmentum (n = 4), red nucleus (n = 3) of the midbrain, vestibular nucleus (n = 6), and a focal tegmental lesion involving the superior olivary nucleus (n = 6) and abducens nucleus (n = 4) of the pons and vestibular nucleus (n = 4) and inferior olivary nucleus (n =

1) of the medulla. DWI (n = 5) showed isointensity or hyperintensity of lesions, and the decreased ADC value was found only in the corpus callosum lesions (n = 2). All detected lesions were completely reversible at follow-up except for the single corpus callosum lesion with an initial low ADC value.
CONCLUSION: Brain lesions were typically located at the cerebellar dentate nucleus, midbrain, dorsal pons, medulla, and splenium of the corpus callosum. According to DWI, most of the lesions in MIE probably corresponded to areas of vasogenic edema, whereas only some of them, located in the corpus callosum, corresponded to cytotoxic edema.

American Journal of Neuroradiology 2007;28:1332-1338

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MR IMAGING OF METRONIDAZOLE-INDUCED ENCEPHALOPA THY: LESION DISTRIBUTION AND DIFFUSION- WEIGHTED IMAGING FINDINGS

BACKGROUND AND PURPOSE: It is difficult to differentiate the cause of brain abscesses with the use of CT and MR imaging. We did a comparative evaluation of pyogenic, tubercular, and fungal brain abscesses by using conventional, diffusion-weighted imaging (DWI), and proton MR spectroscopy (PMRS) with an aim to define the unique features that may differentiate among the pyogenic, tubercular, and fungal brain abscesses.
MATERIALS AND METHODS: We performed a retrospective analysis on 110 patients with surgically proved brain abscesses. Imaging studies included T2, T1, postcontrast T1, DWI, and PMRS. Apparent diffusion coefficient (ADC) of the wall and cavity of the abscesses were quantified. The morphologic, physiologic, and metabolite features of pyogenic (n = 91), tubercular (n = 11), and fungal (n = 8) abscesses were compared. RESULTS: The pyogenic abscesses had smooth (55/91) and lobulated (36/91) walls, whereas the tubercular abscesses had smooth (4/11), lobulated (6/11), or crenated walls (1/11) with no intracavitary projections. The fungal abscesses showed irregular walls (lobulated 4/8, crenated 4/8) with intracavitary projections (8/8). The wall as well as the cavity showed low ADC in the pyogenic and tubercular abscesses. In the fungal abscesses, the wall and projections showed low ADC (8/8); however, the cavity itself showed high ADC (8/8). PMRS showed cytosolic amino acids (89/91), acetate (25/91), and succinate (18/91) in the pyogenic abscesses, whereas lipid/lactate (11/11) was seen in the tubercular abscesses. The fungal abscesses showed lipid (4/8), lactate (7/8), amino acids (4/8), and multiple peaks between 3.6 and 3.8 ppm assigned to trehalose (5/8).
CONCLUSION: Based on the morphologic, ADC, and metabolite information, it may be possible to differentiate among the pyogenic, tubercular, and fungal brain abscesses.

American Journal of Neuroradiology 2007;28:1743-1746

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PREPROCEDUR AL C-REACTIVE PROTEIN LEVELS PREDICT STROKE AND DEATH IN PA TIENTS UNDERGOING CAROTID STENTING

BACKGROUND AND PURPOSE: Elevated baseline levels of C-reactive protein (CRP) are associated with an adverse outcome during coronary stent placement. The aim of this study was to evaluate whether preprocedural CRP levels also are predictive of stroke and death in patients undergoing carotid stent placement (CAS). MATERIALS AND METHODS: We reviewed data prospectively collected from 130 patients (97 men, 33 women; mean age, 68.5 ± 10.1 years; range, 43-89 years) who underwent CAS for symptomatic carotid stenosis and from whom preprocedural CRP values had been obtained. A CRP value of >5 mg/L was considered to be elevated. The frequency of stroke and death within 30 days was compared between patients with and without elevated baseline CRP levels using 2 and multivariate logistic regression analysis. RESULTS: Baseline CRP values were normal in 94 (72.3%) patients but were elevated in 36 (27.7%) patients. The demographic and clinical characteristics were similar in both treatment groups. The 30-day stroke and death rate was significantly higher in patients with

elevated CRP values (8/36; 22.2%) than in those without (3/94; 3.2%; P < .01). After adjusting for demographic characteristics, degree of carotid stenosis, and use of cerebral protection devices and/or statin therapy, an elevated CRP value before CAS remained a significant and independent predictor of stroke and death within 30 days after CAS (odds ratio, 7.7; 95% confidence interval: 1.8-32.8, P = .006). CONCLUSIONS: Baseline CRP is a powerful predictor of outcome in patients undergoing CAS, which underscores the role of inflammation in the pathogenesis of embolic complications during this procedure.

American Journal of Radiology 2007;189:898-903

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EFFECTIVENES S OF MDCT ANGIOGRAPHY FOR THE DETECTION OF INTR ACRANIAL ANEURYSMS IN PATIENTS WITH NONTRA UMATIC SUBARACHNOID HEMORRHAGE

OBJECTIVE. CT angiography (CTA) is a noninvasive imaging technique used to evaluate cerebral vascular structures. Digital subtraction angiography (DSA), although invasive, is the gold standard for diagnosing intracranial aneurysms. The purpose of this study was to evaluate the effectiveness of CTA in the detection of intracranial aneurysms for patients with nontraumatic subarachnoid hemorrhage (SAH) in a level 1 trauma center. MATERIALS AND METHODS. We evaluated the diagnostic accuracy of MDCT in 336 consecutive patients undergoing evaluation for nontraumatic SAH with both CTA and 3D DSA within 48 hours. The diagnostic performance of CTA was assessed by radiology reports using DSA as the gold standard. Analyses were performed per aneurysm and per patient, the results were stratified by aneurysm size and location, and the MDCT data-16-MDCT data versus 4-, 8-, and 16-MDCT combined data-were compared. RESULTS. The overall sensitivity and specificity of CTA per aneurysm was 83% (CI, 0.78-0.87) and 93% (0.88-0.97), respectively. CTA failed to detect 49 of the 284 aneurysms. Thirty-nine (80%) of these 49 missed aneurysms were 3 mm, nine (18%) were 4-6 mm, and one (2%) was 7-10 mm. The sensitivity and specificity of CTA per patient was 95% (0.91-0.97) and 97% (0.92-0.99), respectively. Of 211 patients, a primary aneurysm was missed on CTA in 11 patients. CONCLUSION. CTA showed excellent diagnostic performance for aneurysm detection. The high negative predictive value (91.2%) for the per-patient analysis indicates that CTA has merit as a screening tool. Most aneurysms missed were 3 mm and in patients in whom a primary aneurysm had already been detected

American Journal of Neuroradiology 2007;28:1444-1450

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COMP ARISON OF LOW-DOSE WITH ST ANDARD -DOSE MULTIDETECTOR CT IN CERVICAL SPINE TRAUMA

BACKGROUND AND PURPOSE: The purpose of this work was to evaluate the possible use of low-dose multidetector CT (MDCT) in cervical clearance of patients with blunt trauma. MATERIALS AND METHODS: A total of 191 patients underwent cervical spine MDCT with 6- and 16-MDCT: standard-dose (n = 51) and low-dose MDCT with tube current modulation at high (n = 70) and low (n = 70) tube voltage (kilovolts). Effective dose, image noise, and subjective image quality were calculated in all of the patients. RESULTS: MDCT found 18 patients (9.4%) with a cervical spine fracture, 3 in the standard-dose and 15 in the low-dose group, 14 of them with unstable lesions. Tube current modulation reduced the dose by 50%-61% in all of the low-dose examinations. The mean effective dose was 3.75, 1.57, and 1.08 mSv, and mean image noise was 14.82, 17.46, and 19.72 Hounsfield units for standard dose and low dose with high and low kilovolt examinations, respectively. These differences in mean effective dose and image noise were significant between the 3 examination groups (Kruskal-Wallis test: P < .0001 and P = .0001). Evaluation of subjective image quality by 2 radiologists and 2 residents showed no significant difference in image quality score among the 3 examination groups (Kruskal-Wallis tests, P = .61, .32, .18, and .31). All of the reviewers correctly detected 18 fractures, except 1 resident, who missed 3 fractures. CONCLUSION: Low-dose cervical spine MDCT in patients with blunt trauma gives a substantial dose reduction of 61%-71%, compared with standard-dose MDCT, with a small increase in image noise and without difference in subjective image quality evaluation

PSYCHIATRY

COMMENTARY

The association between long-standing schizophrenia and impaired cognitive functions has been known for a long time. It has often been claimed that newer atypical antipsychotics improve cognitive function in patients with schizophrenia. Goldberg et al suggest that the observed improvements may be due to practice effects by patients becoming more proficient with the tests on repeated administering, rather than any therapeutic effect of antipsychotic medication.

It has long been suggested that schizophrenia is a disorder of the brain rather than the mind. Théberge et al present further evidence that there are abnormalities in the brains of people with schizophrenia before any treatment is started, and that there is further grey matter loss as treatment progresses.

It is known that alcohol dependence runs in families. However, Knop et al show that it is only alcohol dependence that is familial, and not alcohol abuse. Further, remission from either alcohol dependence or abuse cannot be predicted by belonging to a high or a low risk family.

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Arch Gen Psychiatry 2007 Oct; 64(10):1115-22.

Goldberg TE, Goldman RS, Burdick KE, Malhotra AK, Lencz T, Patel RC, Woerner MG, Schooler NR, Kane JM, Robinson DG.

COGNITIVE IMPROVEMENT AFTER TREATMENT WITH SECOND -GENER ATION ANTIPSY CHOTIC MEDICA TIONS IN FIRST-EPISODE SCHIZOPHRENIA: IS IT A PRACTICE EFFECT?

OBJECTIVE: To report the results on cognition of a randomized comparison of 2 widely prescribed second-generation antipsychotic medications, olanzapine and risperidone, in patients with first-episode schizophrenia and a healthy control group. DESIGN: Randomized clinical trial. SETTING: Hospital-based research units. Patients: A total of 104 participants with first-episode schizophrenia and 84 healthy controls. MAIN OUTCOME MEASURES: Cognitive assessment of all study participants occurred at baseline, 6 weeks later, and 16 weeks later. Neurocognitive tests included measures of working memory and attention, speed, motor function, episodic memory, and executive function. RESULTS: No differential drug effects were observed. Of 16 cognitive measures, 9 demonstrated improvement over time and only 2 demonstrated greater rates of change than those observed in the healthy control group undergoing repeated assessment. The composite effect size for cognitive change was 0.33 in the healthy control group (attributed to practice) and 0.36 in the patients with first-episode schizophrenia. Improvements in cognition in the first-episode schizophrenia group could not be accounted for by medication dose, demographic variables, or intellectual level.

Br J Psychiatry. 2007 Oct;191:325-34

Théberge J, Williamson KE, Aoyama N, Drost DJ, Manchanda R, Malla AK, Northcott S, Menon RS, Neufeld RW, Rajakumar N, Pavlosky W, Densmore M, Schaefer B, Williamson PC.

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LONGITUDINAL GREY -MATTER AND GL UTAMA TERGIC LOSSES IN FIRST -EPISODE SCHIZOPHRENIA

BACKGROUND: Progressive volumetric changes in the brains of people with schizophrenia have been attributed to a number of factors. AIMS: To determine whether glutamatergic changes in patients with schizophrenia correlated with grey-matter losses during the first years of illness. METHOD: Left anterior cingulate and thalamic glutamatergic metabolite levels and grey-matter volumes were examined in 16 patients with first-episode schizophrenia before and after 10 months and 30 months of antipsychotic treatment and in 16 healthy participants on two occasions 30 months apart. RESULTS: Higher than normal glutamine levels were found in the anterior cingulate and thalamus of never-treated patients. Thalamic levels of glutamine were significantly reduced after 30 months. Limited grey-matter reductions were seen in patients at 10 months followed by widespread grey-matter loss at 30 months. Parietal and temporal lobe grey-matter loss was correlated with thalamic glutamine loss. CONCLUSIONS: Elevated glutamine levels in never-treated patients followed by decreased thalamic glutamine and grey-matter loss in connected regions could indicate either neurodegeneration or a plastic response to reduced subcortical activity.

Acta Psychiatr Scand. 2007 Nov; 116(5):386-93.

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PATERNAL ALCOHOLISM PREDICTS THE OCCURRENCE BUT NOT THE REMISSION OF ALCOHOLIC DRINKING: A 40-YEAR FOLLOW -UP

Objective: To test the effects of father's alcoholism on the development and remission from alcoholic drinking by age 40. Method: Subjects were selected from a Danish birth cohort that included 223 sons of alcoholic fathers (high risk; HR) and 106 matched controls (low risk; LR). Clinical examinations were performed at age 40 (n = 202) by a psychiatrist using structured interviews and DSM-III-R diagnostic criteria. Results: HR subjects were significantly more likely than LR subjects to develop alcohol dependence (31% vs. 16%), but not alcohol abuse (17% vs. 15%). More subjects with alcohol abuse were in remission at age 40 than subjects with alcohol dependence. Risk did not predict remission from either alcohol abuse or alcohol dependence. Conclusion: Familial influences may play a stronger role in the development of alcoholism than in the remission or recovery from alcoholism.