A summary of some of the recently published, seminal papers in neuroscience

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This review summarizes the data on the development of speech problems after thalamic surgery, retrieving studies between 1960 and September 2014. Of a total of 2,320 patients, 19.8% had speech difficulty after thalamotomy. Speech difficulty occurred in 15% of those treated with a unilateral, and in 40.6% of those treated bilateral thalamotomy. Speech impairment was noticed 2- to 3-times more commonly after a left‑sided procedure (40.7% vs. 15.2%). Of the 572 patients who underwent a deep brain stimulation (DBS), 19.4% experienced speech difficulty. Subgroup analysis revealed that this complication occurs in 10.2% of patients treated unilaterally and 34.6% treated bilaterally. After thalamotomy, the risk was higher in patients with Parkinson’s disease compared to patients with essential tremor: 19.8% versus 4.5% in the unilateral group and 42.5% versus 13.9% in the bilateral group. After DBS, this rate was higher in the essential tremor patients. The authors concluded that both lesioning and stimulation thalamic surgery produce adverse effects on speech. Left‑sided and bilateral procedures are approximately 3-fold more likely to cause speech difficulty. This effect was higher after thalamotomy compared to DBS. In the thalamotomy group, the risk was higher in Parkinson’s patients, whereas in the DBS group it was higher in patients with essential tremor. Understanding the pathophysiology of speech disturbance after thalamic procedures is a priority.

Contributed by Mazda K. Turel


The purpose of this study was to determine whether or not differences in outcomes were identified between transcranial microsurgery (TCM) and extended endoscopic endonasal approaches (EEEAs) in adult patients undergoing primary resection of suprasellar craniopharyngiomas at a single institution. 21 patients satisfied the inclusion criteria; 12 underwent TCM for resection while 9 benefited from the EEEA. There were no significant differences in patient demographics, presenting symptoms, tumor subtype, or preoperative tumor volumes; no tumors had significant lateral or prechiasmatic extension. The extent of resection was similar between these 2 groups, as was the necessity for additional surgery or adjuvant therapy. CSF leakage was encountered similarly sized tumors in adults. The authors’ study, that most outcome variables appear to be uncommon, with similar rates between the groups. The authors concluded, based on this study, that most outcome variables appear to be similar between the TCM and EEEA routes for similarly sized tumors in adults. The authors’ data demonstrate that postoperative visual improvement is statistically more likely in the EEEA despite the increased risk of CSF leakage.

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The primary objective of this study was to compare the overall survival (OS) of patients with an anaplastic astrocytoma (AA) treated with radiotherapy (RT) and either temozolomide (TMZ) or a nitrosourea (NU). Secondary endpoints were time to tumor progression (TTP), toxicity, and the effect of IDH1 mutation status on clinical outcome. Eligible patients who had a younger age at shunt placement experienced more grade ≥3 toxicity (75.8% vs 47.9%, P < 0.001), mainly related to myelosuppression. Of the 196 patients, 111 were tested for IDH1-R132H status (60 RT + TMZ and 51 RT + NU). The authors concluded that RT + TMZ did not appear to significantly improve OS or TTP for AA compared with RT + NU. RT + TMZ was better tolerated. IDH1-R132H mutation was associated with longer survival.

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The authors aimed to characterize the indications and efficacy of ventriculoperitoneal (VP) shunting for patients with glioblastoma-associated hydrocephalus.

A retrospective review was conducted of 841 glioblastoma patients, 64 (8%) of whom underwent a VP shunting for symptomatic hydrocephalus, to analyze symptoms and outcomes after shunting. Of the 64 patients who underwent shunting, 42 (66%) had communicating hydrocephalus (CH) and 22 (34%) had obstructive hydrocephalus (OH). Patients with CH underwent more pre-shunt craniotomies than those with noncommunicating hydrocephalus, with a mean of 2.3 and 0.7 surgeries, respectively (P < 0.001). Ventricular entry during craniotomy occurred in 52% of CH patients vs 59% of those with OH (P = 0.8). After shunting, 61% of all patients achieved symptomatic improvement, which was not associated with the hydrocephalus variant (P > 0.99). The rate of improvement of symptoms of hydrocephalus were as follows: headache, 77%; lethargy, 61%; and altered cognition or memory, 54%. Symptomatic improvement was more likely in patients who had a younger age at shunt placement. Symptomatic improvement, shorter time between glioblastoma diagnosis and shunt placement, and CH rather than OH led to improved post-shunt survival (P = 0.01).

VP shunting improves symptoms in most glioblastoma patients with suspected CH or OH, specifically in younger patients. Symptomatic improvement, shorter duration between glioblastoma diagnosis and shunt placement, and CH rather than OH improve post-shunt survival.

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The aim of the present study was to investigate the extent of intracranial hemorrhage (ICH) growth after tranexamic acid (TA) administration in traumatic brain injury (TBI) patients. This single-blind randomized controlled trial was conducted on patients with traumatic ICH (with less than 30 ml). Patients, based on the inclusion and exclusion criteria, were divided into intervention and control groups (40 patients each). All patients received conservative treatment for ICH, as well as either intravenous TA or placebo. The extent of ICH growth as the primary outcome was measured by brain CT scan after 48 h. Although brain CT scan showed a significant increase in hemorrhage volume in both the groups after 48 h, it was significantly less in the TA group than in the control group (p = 0.04). The mean total hemorrhage expansion was 1.7 ± 9.7 ml and 4.3 ± 12.9 ml in the TA and placebo groups, respectively (p < 0.001). The authors concluded that TA, as an effective hospital-based treatment for acute TBI, could reduce ICH growth.

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Chronic subdural hematoma (CSDH) has a recurrence rate of 9.2%-26.5% after burr-hole surgery. Occasionally, patients with bilateral CSDH undergo unilateral surgery because the contralateral hematoma is asymptomatic; in some of these patients, the contralateral hematoma may subsequently enlarge, requiring additional surgery. The authors investigated the factors related to the growth of these hematomas. Ninety-three patients with bilateral CSDH who underwent unilateral burr-hole surgery were studied. The overall growth rate was 19% (18 of 93 hematomas), and a significantly greater percentage of the hematomas that were iso- or hypointense on preoperative T1-weighted imaging showed growth compared with other hematomas (35.4% vs 2.3%, P < 0.001). Multivariate logistic regression analysis showed that findings on preoperative T1-weighted MRI were the sole significant predictor of hematoma growth, and other factors such as antiplatelet or anticoagulant drug use, patient age, patient sex, thickness of the treated hematoma, and T2-weighted MRI findings were not significantly related to hematoma growth. The adjusted odds ratio for hematoma growth in the T1 isointense/hypointense group relative to the T1 hyperintense group was 25.12 (95% CI 3.89-51.58, P < 0.01).

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The aim of the study was to compare posterior cervical transfacet fusion to conservative physical treatment in single level cervical radiculopathy. Patients were randomized to a surgical group (n = 40) where patients were given posterior cervical transfacet fusion, and a traction group (n = 40) where patients were treated conservatively with a mechanical cervical traction. Post-treatment, visual analog scale arm scores were higher in the traction group (4.7 vs. 1.5, the day after treatment) and at follow-up controls (traction group vs surgical group: 5.3 vs 0.6 at 1 month, 3.6 vs. 0.3 at 6 months, 1.8 vs. 0.2 at 12 months). Neck disability index scores were lower in the surgical group (surgical group vs. traction group: 4.4 vs. 20.3 at 1 month, 1.3 vs. 10.5 at 6 months). Short form (SF)-36 scores were higher in the surgical group (surgical group vs. traction group: 96 vs. 70 at 1 month, 96.5 vs. 82.6 at 6 months). Neck disability index and SF-36 scores were superimposable between the groups at a 12-month follow-up. No adjacent-segment arthritis or late complications were reported at 1-year follow-up in the surgical group. The authors concluded that posterior cervical transfacet fusion is a safe and effective procedure to treat single level cervical radiculopathy.

Contributed by Mazda K. Turel


The authors used the prospective AO Spine International database to evaluate the impact of preoperative body mass index (BMI) on surgical outcomes in degenerative cervical myelopathy (DCM). In 757 patients, the mean BMI was 27.3 (±5.7) with 17 (3.5%) patients being underweight, 271 (35.8%) patients being of normal weight, 275 (36.3%) patients being overweight, and 194 (25.7%) patients being obese. Controlling for the preoperative mean Japanese Orthopedic Association Scale Score (mJOA), neck disability index (NDI), smoking status, age, and sex, elevated BMI was associated with increased neck disability at 1 year (P<0.01). On an average, NDI scores were 4.5 points higher for overweight patients and 5.7 points higher for obese patients when compared with individuals of normal weight. Obese patients had 0.5 times odds of showing improvement equal to the minimal clinically important difference of NDI compared with their normal weight counterparts. Although there were strong trends towards reduced SF-36 mental component scores and physical component scores with elevated body mass index (BMI), no association was found between BMI and 1-year mJOA. The authors concluded that increased BMI, particularly obesity, was associated with increased postoperative disability. This represents a potentially modifiable risk factor which the clinicians can target to optimize postoperative outcomes.

Contributed by Mazda K. Turel


The authors aimed to determine the effect of collar-aided fixation on outcomes after a laminoplasty for cervical compressive myelopathy. This trial analyzed 74 patients (52 males, 22 females, mean age 72.7 years) with cervical compressive myelopathy who had undergone a double-door laminoplasty. Before surgery, they were randomly assigned to the collar-fixation (CF) group (postoperative Philadelphia collar for 2 weeks) or the no-collar (NC) group. VAS scores up to 1 year after operation were similar with or without collar fixation. JOA scores improved significantly in both the groups. There was no statistically significant difference between the groups with regard to the improvement of JOA scores (54.9% in CF group, 47.0% in NC group, P = 0.80). The improvement in short form (SF)-36 was similar in both the groups. Loss of range of movement and lordotic angle of the cervical spine did not differ between the groups. The incidence of complications was similar in both the groups.

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Flexion-distraction injuries (FDI) represent 5% to 15% of traumatic thoracolumbar fractures. The authors conducted a systematic review that examined minimally invasive surgery instrumentation without arthrodesis for traumatic FDI of the thoracolumbar spine. Seven studies with 44 patients met inclusion criteria. There were 19 patients with osseous FDI and 25 with ligamentous FDI. When reported, the patients (n = 39) were neurologically intact preoperatively and at follow-up. Osseous FDI patients underwent instrumentation at 2 levels, while those with ligamentous injuries, at approximately 4 levels. The complication rate was 2.3%. All patients had at least 6 months of follow-up and demonstrated healing on follow-up imaging. The authors concluded that percutaneous instrumentation without arthrodesis represents a low-risk intermediate between conservative management and open instrumented fusion. This “internal bracing” can be used in osseous and ligamentous FDIs. Neurologically intact patients who do not require decompression and those who may not tolerate or fail conservative management might be candidates.

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The objectives of this study were to identify the risk factors for sagittal imbalance and to describe the outcomes of simple decompression surgery. This was a retrospective study that included 83 consecutive patients (mean age 68 years) who underwent decompression surgery and had a minimum of 12 months of follow-up. The primary end point was
normalization of the sagittal imbalance after decompression surgery. Sagittal imbalance was defined as a C7 sagittal vertical axis (SVA) ≥40 mm on a 36-inch-long lateral whole spine radiograph. Bilateral decompression was performed via a unilateral approach with a tubular retractor.

Sagittal imbalance was observed in 54% (45/83) of the patients, and its risk factors were old age and a large mismatch between the pelvic incidence and lumbar lordosis. The 1-year normalization rate was 73% after decompression surgery, and the median time to normalization was 1 to 3 months. Patients who did not experience SVA normalization exhibited a low thoracic kyphosis ($P < 0.01$) and spondylolisthesis before surgery. The authors concluded that sagittal imbalance was observed in more than 50% of patients, but this imbalance was correctable via a simple decompression surgery in 70% of patients, thus avoiding a major deformity surgery correction.

**Contributed by Mazda K. Turel**


The aim of this meta-analysis was to compare the incidence rate of adjacent segment pathology (ASP) in patients undergoing a minimally invasive procedure (MIS) versus an open procedure. The results retrieved were last updated on June 15, 2016. Overall, 9 trials comprising 770 patients were included in the study. The pooled data analysis demonstrated low heterogeneity between the trials and a significantly lower ASP incidence rate in patients who underwent MIS procedure, compared with those who underwent open procedure ($P = 0.0001$). Single-level lumbar interbody fusion was performed in 6 trials of 408 patients and a lower incidence of ASP was found in the MIS group, compared with those who underwent open surgery ($P = 0.002$). Moreover, the pooled data analysis showed a significant reduction in the incidence rate of adjacent segment disease (ASDIs; $P = 0.0003$) and adjacent segment degeneration (ASDeg; $P = 0.0002$) for both the procedures, favoring the MIS procedure. Subgroup analyses showed no difference in follow-up durations between the procedures ($P = 0.93$). Therefore, the authors concluded that MIS-TLIF/PLIF can reduce the incidence rate of ASDIs and ASDeg, compared with open surgery.

**Contributed by Mazda K. Turel**

Høy K, *et al.* Addition of TLIF does not improve outcome over standard posterior instrumented fusion. 5-10 years long-term follow-up: Results from a RCT. Eur Spine J. 2017;26:658-65

Between 2003 and 2005, 100 patients entered a RCT between transforaminal lumbar inter-body fusion (TLIF) or posterolateral instrumented lumbar fusion (PLF). The patients suffered from LBP due to segmental instability, disc degeneration, former disc herniation, and spondylolisthesis. Meyering grade <2, functional outcome parameters as Dallas pain questionnaire (DPQ), short form (SF)-36, low back pain questionnaire (LBRS), and Oswestry disability index (ODI) were registered prospectively, and after 5-10 years. Mean follow-up was 8.6 years (5-10 years) and was available in 93% subjects. The mean age at follow-up was 59 years. The reoperation rate, on a long-term perspective, was 14% among the groups. Back pain was around 3.5, and leg pain 2.5 in both groups. No difference in the functional outcome was observed between the groups. Overall, global satisfaction with the primary intervention at 8.6 year was 76% (75% with TLIF and 77% with PLF). The authors concluded that in a long-term perspective, patients with TLIF’s did not experience better outcome scores.

**Contributed by Mazda K. Turel**

Abilleira S, *et al.* Outcomes after direct thrombectomy or combined intravenous and endovascular treatment are not different. Stroke 2017; 48: 375-8

Whether or not intravenous thrombolysis adds a further benefit when given before endovascular thrombectomy (EVT) is unknown. Furthermore, intravenous thrombolysis delays the time to groin puncture, mainly among drip and ship patients. The authors selected cases that received direct EVT ($n = 599$) or a combined intravenous thrombolysis + EVT ($n = 567$) for anterior circulation strokes. Stratification through propensity
score achieved balance of baseline characteristics across the treatment groups. There was no association between the treatment modality and a good outcome (odds ratio, 0.97), death (odds ratio, 1.07), or symptomatic bleeding (odds ratio, 0.56). The authors concluded that outcomes after direct EVT or combined intravenous thrombolysis + EVT are not different. If confirmed by a randomized controlled trial, it may have a significant impact on organization of stroke systems of care.

Contributed by Mazda K. Turel


The authors attempted to compare the immediate and long-term outcomes of microsurgery (n = 47) versus endovascular therapy (n = 161) in 208 consecutive patients treated for basilar apex aneurysms. Among these 208 aneurysms, 116 (56%) were ruptured, including 92 (57%) and 24 (51%) of the endovascularly and microsurgically managed aneurysms, respectively. The average Hunt and Hess grade was 2.4 (2.4 in the endovascular group and 2.2 in the microsurgical group; P = 0.472). Postoperative complications of cranial nerve deficits and hemiparesis were more common in patients treated microsurgically than endovascularly (55.3% vs 16.2%, P < 0.05; and 27.7% vs 10.6%, P < 0.05, respectively). However, aneurysm remnants and need for retreatment were more common in the endovascular than the microsurgical group (41.3% vs 2.3%, P < 0.05; and 10.6% vs 0.0%, P < 0.05, respectively). Stent placement significantly reduced the need for retreatment. Rehemorrhage rates and average Glasgow Outcome Scale (GOS) score at discharge and 1 year after treatment were not statistically different between the two treatment groups. The authors concluded that patients with basilar apex aneurysms were significantly more likely to be treated via endovascular management, but compared with those treated microsurgically, they had higher rates of recurrence and need for retreatment.

Contributed by Mazda K. Turel


Intracerebral hemorrhage (ICH) volume, particularly if ≥30 mL, is a major determinant of poor outcome. The authors used a multinational ICH data registry to study the characteristics, course, and outcomes of supratentorial hematomas with volumes <30 mL.

Outcomes were categorized as early neurological deterioration (END), hematoma expansion, Glasgow Outcome Scale (GOS), and in-hospital death. Poor outcome was defined as a composite of in-hospital death and severe disability (GOS ≤ 3). Among 375 cases of supratentorial ICH with volumes <30 mL, expansion and END rates were 19.2% and 7.5%, respectively. Hemorrhage growth was independently associated with END (odds ratio: 28.7, p < 0.0001). Expansion rates did not differ according to the ICH location. Overall, 14% patients died in the hospital and 29% had severe disability at 30 days; there was a cumulative poor outcome rate of 43%. Age, admission Glasgow Coma Scale, intraventricular extension, and END were independently associated with a poor outcome. There was no difference in the poor outcome rates between lobar and deep locations (40.2% versus 43.8%). The authors concluded that patients with a supratentorial ICH <30 mL have high rates of poor outcome at 30 days, regardless of location. Nearly 1 in 5 hematomas <30 mL expands, leading to END or death.

Contributed by Mazda K. Turel


Non-lesional spontaneous intracerebral hemorrhage (ICH) is one of the most common causes of emergency admission in neurosurgical practice. As many as 25% of ICH also have large intraventricular extension (IVH), which carries more than 50% mortality and >20% serious disability for the survivors. A large volume IVH also leads to third and fourth ventricular obstruction causing obstructive hydrocephalus. Various earlier trials have reported altered mortality and function if thrombolysis is practised. The ‘Clot Lysis: Evaluating Accelerated Resolution of Intraventricular Hemorrhage (CLEAR) trial’ earlier demonstrated that intraventricular administration of recombinant tissue plasminogen activator (rtPA) was an efficacious and relatively...
safe option for patients with extensive IVH. However, there are additional concerns of bleeding complications, ventriculitis and treatment cost. CLEAR trial had earlier reported resolution of IVH, shorter duration of hospital stay but comparable rates of mortality as compared to the control group. As an extension to the CLEAR trial, efficacy of extraventricular drainage (EVD) plus rtPA was tested in patients. These interventions showed radiologic resolution of the hematoma in the former group. The primary outcome to measure was improvement in the functional parameters (measured on modified Rankin Scale) compared with saline irrigation alone. Though the 180 day fatality rate was lower in the rtPA group, routine irrigation of ventricles with rtPA via an EVD did not translate into an improved functional outcome in patients with IVH. With the currently available level of evidence, clot removal shows an improved functional outcome but rtPA cannot be recommended as an intervention for this purpose with the currently available statistics.

Contributed by Manjul Tripathi


Dementia is the new epidemic and the causes are diverse. Diagnosis of human prion disease remains a difficult task in view of the difficulties encountered in procuring the pathologic specimen. There have been consensus criteria which include clinical, biochemical, radiologic, and neuropathologic parameters but the definitive diagnosis can only be established by detection of Creutzfeldt-Jacob disease (CJD) specific prion protein (PrPCJD) in the neuro-pathologic specimen. In this prospective laboratory analysis, the authors have described a relatively easy method of real time quaking induced conversion testing (RT-QuIC) for detection of PrPCJD in cerebrospinal fluid (CSF) and brushings from olfactory mucosa (OM). In a simple algorithm for the in vivo diagnosis of probable CJD patients, the authors have demonstrated that the combined results of RT-QuIC assays on CSF and OM samples allow for the establishment of the antemortem diagnosis of sporadic CJD with 100% specificity and sensitivity. Further evaluation of this finding may provide a new diagnostic parameter, which may improve the accuracy and speed of sporadic CJD diagnosis compared with internationally recognized diagnostic criteria, especially in the sporadic CJD MV/2PrPCJD variant, where diagnostic sensitivity of the supportive investigations is relatively low. Apart from it, this methodology provides a way to obtain a pathologic specimen with minimal operative intervention and thus avoids labor intensive sterilization procedures after diagnostic interventions for prion disease.

Contributed by Manjul Tripathi


Uncontrolled industrialization, urbanization and changes in population dynamics have caused a rapid and unprecedented increase in population in the cities throughout the world. Such changes have led to shrinkage of areas demarcated for living and a major proportion of the population is living near main roads and on streets which face the problem of air and noise pollution round the clock. This interesting article has highlighted a possible temporal association between the risk of dementia in patients living near major roads (primary urban roads, arterial roads and main highways) and who are subjective to a higher degree of air/noise pollution. Surprisingly, there was no association between the place of living and the risk of development of Parkinson’s disease (PD) or multiple sclerosis (MS). Such findings highlight the urgent need for planning of smart cities in such a way that the city not only accommodates its residents but also saves them from the unwanted exposure to pollutants.

Contributed by Manjul Tripathi


Opioids are one of the most commonly used or rather misused category of drugs in medical science after steroids. For the last three decades, the medical use of opioids for various indications has increased significantly. In this remarkable study by Barnett et al., the habit of the physicians in prescribing opioids has been categorized into two groups: low or high intensity prescribers. It has been observed that emergency physicians vary by a factor of more than 3 in their habit of opioid prescription, which translates into unnecessary long term opioid consumption/addiction in patients treated by high intensity prescriber physicians. Another reason for the incidence of high prescription of the opioids has been the “clinician’s inertia” of outpatient clinicians for continuing earlier prescribed medications. It has been observed that this habit of high intensity prescribers has led to more than four times increased consumption of opioids in the United States, especially in the elderly population, who are then exposed to increased rates of falls, fractures and death from any cause associated with opioid related overdose. This article highlights the need for reevaluating the practice of the physicians themselves, while prescribing drugs such as opioids, and for establishment of surveillance systems in the hospitals to keep a check on such habits.

Contributed by Manjul Tripathi


In this thought provoking article, Parikh et al., have highlighted the need for the inclusion of cost stewardship training in the curriculum of medical education. At present, health and medical training are among the biggest industries throughout the world, and yet doctors are not trained for implementing cost effective treatments for their patients. Though it is only an upcoming trend in India, health insurance has become a norm in the developed countries. Insurance companies are not only governing the choice of treatment administered by physicians.
but also deciding their treatment category. A treating physician has the maximum experience and exposure to implement cost containment measures, followed by resident doctors, and then medical students. A sick patient is an economic responsibility for the family and the care givers. Cost effectiveness has to start from the very first visit when the patient is transported to the hospital for the initial consultation. The practice has to continue right up to his discharge and follow up in the hospital. It also includes cost assessment of disability adjusted life years and the time that the patients and caregivers spend with inpatient and outpatient care providers. The authors have suggested four changes; first, the policy makers and payers should encourage reforms in payment and health insurance design that align the economic interests of the patients, providers, and other stakeholders. Second, educators should provide opportunities for trainees to see for themselves the patients’ lives, to help them grasp the true economic effects of their recommendations. Third, educators should avoid narrowly framing health care costs as the short-term costs associated with individual clinical decisions. Finally, training in cost containment could be integrated into the premedical and medical curricula as well.

Contributed by Manjul Tripathi


A possible link between autoimmune optic neuritis (ON) and thyroid disorders has long been speculated. This retrospective study performed on 97 Chinese patients analysed the frequency of the presence of thyroid abnormalities in patients with AQP4-Ab (aquaporin-4 antibody) positive optic neuritis (ON). Anti-thyroid antibodies (ATA) were two times higher in the AQP4-ab positive group compared to the AQP4-ab negative group. Seropositive ON patients exhibited lower free thyroxine (FT) 3 and FT4 levels and a higher prevalence of definite Hashimoto thyroiditis (HT). Among seropositive patients, those with HT had a worse visual outcome. While the study just strengthens the “autoimmune” link between thyroid disorders and optic neuritis, further prospective studies with larger sample size are warranted.

Contributed by Aastha Takkar


Brain ischemia is known to trigger a complex inflammatory response. Earlier animal models of acute ischemic stroke had shown a reduction in the infarct volume and an improved outcome by blocking of the leukocyte-endothelium adhesions by antagonism of \( \alpha_4 \) integrin. In this double blind, phase 2 trial, the effect of one dose of natalizumab, an antibody against the leukocyte adhesion molecule \( \alpha_4 \) integrin, was assessed in patients with acute ischemic stroke. 161 patients with acute ischemic stroke from 30 US and European clinical sites were randomly assigned (1:1) to 300 mg intravenous natalizumab or a placebo. The primary endpoint was the change in infarct volume from baseline to day 5. Interestingly, although natalizumab and the placebo groups were noted to have similar incidences of adverse events and deaths, two deaths were reported in the natalizumab group because of adverse events that were assessed as being related to the treatment administered by the investigator. Natalizumab administered up for up to 9 h after the stroke onset was not shown to reduce the infarct growth when compared with a placebo at any time interval, and no difference was noted between the natalizumab and placebo groups in the final outcome. Treatment associated benefits on functional outcomes warrant further investigation.

Contributed by Aastha Takkar


The efficacy, safety and tolerability of lacosamide as a first-line monotherapy option for newly diagnosed patients with epilepsy was studied in this phase 3, randomized, double-blind, non-inferiority trial. This was a head to head monotherapy trial involving 888 patients, randomly assigned in a 1:1 ratio, to receive lacosamide monotherapy or controlled-release carbamazepine (carbamazepine-CR) twice daily. The primary efficacy outcome was the proportion of patients remaining seizure-free for 6 consecutive months after stabilization at the last assessed dose. In the full analysis set, 74% patients receiving lacosamide and 70% patients receiving carbamazepine completed a 6-month seizure-free period. 90% of the patients taking lacosamide and 91% taking carbamazepine-CR were predicted by the Kaplan Meier method to be seizure-free at 6 months. Treatment with lacosamide met the predefined non-inferiority criteria when compared with carbamazepine-CR. Therefore, it was concluded that lacosamide might prove to be a suitable option for patients with newly diagnosed epilepsy.

Contributed by Aastha Takkar


Recent randomized trials have adequately shown the benefits of endovascular therapy in patients who have developed an acute stroke. Identification of patients requiring decompressive hemi-cranietomy (DH) after endovascular therapy (EVT) is crucial as clinical signs are not reliable and early DH has been shown to improve the clinical outcome. This prospective study was aimed at identifying imaging-based scores that predicted the risk for the development of space occupying ischemic strokes that may benefit from DH. Among 218 patients who underwent an EVT in this study, 20 patients required DH. The predictive value of non-contrast cranial computed tomography (ncCT) and cerebral blood volume (CBV) Alberta Stroke Program Early CT score (ASPECTS) were investigated for DH using logistic regression models. Baseline and
follow-up ncCT ASPECTS as well as baseline CBV ASPECTS were significantly lower in patients with DH. ncCT and CBV ASPECTS predicted the need for DH. Cut-off ncCT-ASPECTS at baseline assessment was 7, ncCT-ASPECTS at follow-up was 4 and CBV ASPECTS at baseline assessment was 5 points. As expected, ASPECTS assessment could be useful for an early identification of patients who may require DH after EVT for acute large vessel occlusion.

Contributed by Aastha Takkar


This interesting, randomized, double blind, placebo controlled, multi-centric phase 2 study assessed the safety, tolerability and efficacy of opicinumab (a human monoclonal antibody; anti-LINGO-1) given soon after the first episode of optic neuritis. The rationale for its administration was its probable role in facilitating re-myelination and its neuroprotective mechanism. The drug was administered after treatment with high-dose methylprednisolone, within 28 days from the study baseline using computer-generated block randomization (1:1) method. 100 mg/kg opicinumab intravenously or a placebo, were administered once every 4 weeks (six doses) and the patients were followed up to week 32. The primary endpoint was re-myelination at 24 weeks, measured as recovery of the affected optic nerve conduction latency that was assessed using the full-field visual evoked potential (FF-VEP). This was compared with the unaffected fellow eye. No significant re-myelination was noted between the opicinumab and placebo groups in the intention to treat population at week 24. However, results from the pre-specified per protocol population suggest that enhancement of re-myelination in the human central nervous system might be possible with opicinumab and, therefore, this role of the drug warrants further clinical investigation.

Contributed by Aastha Takkar


This study shows the result of the investigation on the outbreak of an unexplained illness in the largest litchi fruit growing region of India, Muzaffarpur. This was a combined effort of the National Centre for Disease Control (India) and Centre for Disease Control (US). The study recruited patients from two major hospitals and the patients were evaluated by assessing their blood sugar, their CSF, as well as their imaging and other work up for encephalopathy. The samples (blood, cerebrospinal fluid, and urine) and environmental specimens (litchis) were tested for evidence of infectious pathogens, pesticides, toxic metals, and other non-infectious causes, including the presence of hypoglycin A or methylenecyclopropylglycine (MCPG), which is a naturally-occurring fruit-based toxin that causes hypoglycaemia and metabolic derangement. This investigation showed that the outbreak of acute encephalopathy in Muzaffarpur was associated with both hypoglycin A and MCPG toxicity. The absence of an evening meal in the patient’s dietary habit was found to be associated with a higher chance of having this illness. To prevent illness and to reduce mortality in the region, the authors recommended minimal litchi consumption, ensuring intake of the evening meal, and a rapid glucose correction in patients who were found to be susceptible to the encephalopathy.

Contributed by Ravi Yadav


The investigators of this study are performing whole-genome sequencing of families with autism spectrum disorder (ASD) for resource building that can be used to subcategorize the phenotypes and assess the underlying genetic factors. In this study, they report the results of 5205 samples from families with ASD. They found 18 new candidate risk genes, an average of 73.8 de novo single nucleotide variants and 12.6 de novo insertions and deletions or copy number variations per ASD subject. The study could identify a molecular basis for ASD in 294 of the 2,620 (11.2%) cases and 7.2% of these patients carried copy number variations and/or chromosomal abnormalities. The authors suggest that it is important to detect all forms of genetic variations as they could be useful for diagnostic and therapeutic targeting.

Contributed by Ravi Yadav


This study provides important insights into the association of anti-anti-leucine-rich glioma inactivated-(LGI1) encephalitis with unique human leukocyte antigen (HLA) subtypes. The investigators compared the HLA genotypes of healthy Korean controls (containing 210 epilepsy patients and 485 healthy subjects) with that of 11 anti-LGI1 and 17 anti-N-methyl-D-aspartate receptor (NMDAR) encephalitis patients. The prevalence of alleles [DRB1*07:01-DQB1*02:02 haplotype (10 patients; 91%) in HLA class II genes, as well as with B*44:03 (8 patients; 73%) and C*07:06 (7 patients; 64%) in the HLA class I region] anti-LGI1 encephalitis was significantly higher than that in the epilepsy controls or healthy controls. However, anti-NMDAR encephalitis was not associated with HLA genotypes. This suggests that most of anti LGI1 encephalitis develops in a population with specific HLA subtypes.

Contributed by Ravi Yadav


This study reports the prevalence of neurological autoantibodies in consecutive patients presenting to neurology services with...
new-onset epilepsy or established epilepsy of unknown etiology. Patients who were excluded if they had underlying metabolic or structural abnormalities that would explain their seizures. Patients with idiopathic mesial temporal sclerosis were not excluded. The antibodies (Ab) tested included NMDAR Ab, VGKC-Ab, leucine-rich glioma-inactivated protein 1 [LGII], GAD65-Ab, γ-aminobutyric acid type B receptor [GABAB] Ab, α-amino-3-hydroxy-5-methyl-4-isoxazolepropionic receptor [AMPAR] Ab, anti-neuronal nuclear antibody type-1 [ANNA-1 or anti-Hu] Ab, Purkinje cell cytoplasmic antibody type 2 [PCA-2]Ab, amphiphysin Ab, collapsin-response mediator protein 5 [CRMP-5] Ab, and thyroglobulin autoantibody [TPO-Ab].

There was no significant difference in the Physical Component Summary score of the 36-Item Short-Form Health Survey between the groups. Serious adverse events were reported among 20.4% of those who received ocrelizumab and 22.2% of those who received placebo. Adverse events that led to discontinuation of the trial agent occurred among 4.1% of patients who received ocrelizumab and 3.3% of patients who received placebo. The most common adverse event among ocrelizumab-treated patients was infusion reaction. Five deaths were reported: four (0.8%) in the ocrelizumab group owing to pulmonary embolism, pneumonia, pancreatic carcinoma, and aspiration pneumonia and one (0.4%) in the placebo group owing to a road-traffic accident. Neoplasms were reported in 11 patients (2.3%) in the ocrelizumab group and in 2 patients (0.8%) in the placebo group. This is the first trial that reported a positive outcome in patients with PPMS. However, the higher incidence of neoplasm in the study group requires further investigation.

**Contributed by Srijithesh P.R.**


This study is a case-control study from the Italian Project on Stroke at Young Age (IPSYS) registry of young onset...
ischemic stroke. The study investigated the association between migraine and ischemic stroke due to spontaneous cervical artery dissection (CEAD). It assessed whether the frequency of migraine differs between patients with ischemic stroke due to CEAD versus those due to other causes. Of the 2485 patients with young onset ischemic stroke, 334 patients had CEAD ischemic stroke. Migraine was more frequent in the CEAD group (108 [30.8%] vs 525 [24.4%], \( P = 0.01 \)). Migraine without aura was associated with CEAD ischemic stroke, while migraine with aura was not. This study corroborates evidence from other studies that the risk of CEAD increases two-folds in patients with migraine. However, the study’s result is at variance from the previous studies that found an association with patients with migraine accompanied by an aura. The results call for further studies to investigate the nature of the relationship between migraine and ischemic stroke in young.

**Contributed by Srijithesh P.R.**


SOCRATES was a randomized, double-blind, controlled trial of ticagrelor versus aspirin in patients aged 40 years or older with a non-cardioembolic, non-severe acute ischemic stroke, or high-risk transient ischemic attack, from 674 hospitals in 33 countries. The authors randomly allocated 13,199 patients into (1:1) either aspirin (300 mg on day 1 followed by 100 mg daily for days 2–90, given orally; \( n = 6610 \)) or to ticagrelor (180 mg loading dose on day 1 followed by 90 mg twice daily for days 2–90, given orally, \( n = 6589 \)) within 24 hours of symptom onset. The patients were classified into the atherosclerotic and non-atherosclerotic groups for the prespecified, exploratory analysis reported in this study. The primary endpoint was the time to occurrence of stroke, myocardial infarction, or death within 90 days. Efficacy analysis was by intention to treat. Potentially symptomatic ipsilateral atherosclerotic stenosis was reported in 3081 (23%) of 13,199 patients. 103 (6.7%) of 1542 patients with ipsilateral stenosis in the ticagrelor group and 147 (9.6%) of 1539 patients with ipsilateral stenosis in the aspirin group had an occurrence of stroke, myocardial infarction, or death within 90 days (hazard ratio 0.68 [95% CI 0.53–0.88]; \( P = 0.003 \)). In 10,118 patients with no ipsilateral stenosis, 339 (6.7%) of 5047 patients in the ticagrelor group had an occurrence of stroke, myocardial infarction, or death within 90 days compared with 350 (6.9%) of 5071 patients in the aspirin group (0.97 [0.84–1.13]; \( P = 0.72 \)). There were no significant differences in the proportion of life-threatening bleeding or major or minor bleeding events in patients with ipsilateral stenosis in the ticagrelor group compared with the aspirin group. The authors concluded that ticagrelor was superior to aspirin at preventing stroke, myocardial infarction, or death at 90 days in patients with acute ischemic stroke or transient ischaemic attack when associated with ipsilateral atherosclerotic stenosis.

**Contributed by Dr. Anant Mehrotra**


The authors conducted a double-blind, placebo-controlled, multicenter, randomised withdrawal phase 2a trial in 25 secondary care centres in 12 countries. After a 7-day run-in phase, eligible patients aged 18–80 years with confirmed trigeminal neuralgia received open-label, BIIB074, 150 mg three times per day, orally, for 21 days. Patients who met at least one response criteria were then randomly assigned (1:1) to BIIB074 or placebo for up to 28 days in a double-blind phase. Patients, clinicians, and assessors were masked to treatment allocation. The primary endpoint was the difference between groups in the number of patients classified as treatment failures during the double-blind phase assessed in the modified intention-to-treat population. The study enrolled 67 patients into the open-label phase; 44 completed open-label treatment, and 29 were randomly assigned to double-blind treatment (15 to BIIB074 and 14 to placebo). During the double-blind phase, five (33%) patients assigned to BIIB074 versus nine (64%) assigned to placebo were classified as treatment failures (\( P = 0.0974 \)). BIIB074 was well tolerated, with similar adverse events in the double-blind phase to that of the placebo. Headache and dizziness were the most common adverse effects in the open label phase. Headache, pyrexia, nasopharyngitis, sleep disorder, and tremors were the most frequent adverse events in patients assigned to BIIB074 (in one [7%] of 15 patients for each event), and headache, dizziness, diarrhoea, and vomiting were the most frequent adverse events in patients assigned to placebo (in one [7%] of 14 patients for each event) in the double-blind phase. The authors concluded that the primary endpoint of treatment failure was not significantly lower in the BIIB074 group than in the placebo group.

**Contributed by Dr. Anant Mehrotra**


The authors conducted a randomized, double-blind, placebo-controlled trial of pregabalin in patients with sciatica. 209 patients were randomly assigned to either the pregabalin group (\( n = 108 \); at a dose of 150 mg per day that was adjusted to a maximum dose of 600 mg per day for up to 8 weeks) or the placebo group (\( n = 101 \) for 8 weeks). The primary outcome was the leg-pain intensity score on a 10-point scale (with 0 indicating no pain and 10 the worst possible pain) at week 8; the leg-pain intensity score was also evaluated at week 52, a secondary time point for the primary outcome. Secondary outcomes included the extent of disability, back-pain intensity, and quality-of-life measures at prespecified time points over the course of 1 year. At week 8, the mean unadjusted leg-pain intensity score was 3.7 in the pregabalin group and 3.1 in the placebo group (adjusted mean difference, 0.5; 95% confidence interval [CI], −0.2 to 1.2; \( P = 0.19 \)). At week 52, the mean unadjusted leg-pain intensity score was 3.4 in the pregabalin group and 3.0 in the placebo group (adjusted mean difference, 0.3; 95% CI, −0.5 to 1.0; \( P = 0.46 \)). No significant between-group differences were
observed with respect to any secondary outcome at either week 8 or week 52. A total of 227 adverse events were reported in the pregabalin group and 124 in the placebo group. Dizziness was more common in the pregabalin group than in the placebo group. The authors concluded that treatment with pregabalin did not significantly reduce the intensity of leg pain associated with sciatica and did not significantly improve other outcomes, as compared with placebo, over the course of 8 weeks. The incidence of adverse events was significantly higher in the pregabalin group than in the placebo group.

Contributed by Dr. Anant Mehrotra


Sixty adult patients from the French COVAC group (Cohort of patients with primary vasculitis of the central nervous system), with biopsy or angiographically proven primary angiitis of the central nervous system, and brain magnetic resonance imaging available at the time of diagnosis, were included in the study. The initial manifestations were focal deficit(s) (83%), headaches (53%), cognitive disorders (40%), and seizures (38.3%). In 42% of patient, the MRI findings were multi-territorial, bilateral, distal acute stroke lesions after small-to-medium artery distribution, with a predominant carotid circulation distribution. Hemorrhagic infarctions and parenchymal hemorrhages were also frequently found in the cohort (55%). Acute convexity subarachnoid hemorrhage was found in 26% of patients and 42% demonstrated pre-eminent leptomeningeal enhancement, which was found to be significantly more prevalent in biopsy-proven patients (60% versus 28%; \( P = 0.04 \)). Seven patients had tumor-like presentations. Seventy-seven percent of magnetic resonance angiographic studies were abnormal, revealing proximal/distal stenosis in 57% and 61% of patients, respectively.

Contributed by Dr. Anant Mehrotra


The authors conducted a prospective observational study in which 43 patients with severe traumatic brain injury (TBI; \( n = 20 \)) or aneurysmal subarachnoid haemorrhage (aSAH; \( n = 23 \)) were enrolled. DTI data were acquired at approximately day 12 (median, 12 days; interquartile range, 12-14 days) after injury in 22 patients (TBI, \( n = 12 \); aSAH, \( n = 10 \)). Whole-brain DTI tractography was performed, and the following parameters quantified: average fractional anisotropy, mean diffusivity, tract length, and the total number of reconstructed fiber tracts. These were compared between the TBI and aSAH patients and correlated with mortality and functional outcome assessed at 6 months by the Glasgow Outcome Scale Extended. The differences for fractional anisotropy values (\( P = 0.01 \)), total number of tracts (\( P = 0.03 \)), and average tract length (\( P = 0.002 \)) between survivors and non-survivors were statistically significant. The authors concluded that DTI parameters, assessed at approximately day 12 after injury, correlated with mortality at 6 months in patients with severe TBI or aSAH. Similar patterns were found for both the patients with TBI as well as aSAH.

Contributed by Dr. Anant Mehrotra


High-dose immunosuppression and autologous hematopoietic cell transplantation (HCT) for multiple sclerosis (HALT-MS) is a phase II prospective, open-label, single arm clinical trial of autologous HCT transplantation for patients with relapsing-remitting (RR) MS who experienced relapses with disability progression while on MS disease-modifying therapy. The primary endpoint was event-free survival (EFS), defined as survival without death or disease activity (disability progression, relapse, or new lesions on MRI), evaluated through a 5-year period. Autologous peripheral blood stem cells were collected and CD34-selected. High-dose chemotherapy was instituted employing carmustine, etoposide, cytarabine and melphalan. This was followed by administration of rabbit antithymocyte. The CD34 hematopoietic progenitor cells were thawed and infused. Filgrastim was given until recovery of blood counts. Prednisone was administered to prevent the engraftment syndrome. Twenty-four participants underwent the intervention. The median follow-up was 62 months (range 12–72). EFS was 69.2% (90% confidence interval [CI] 50.2–82.1). Progression-free survival, clinical relapse-free survival, and MRI activity free survival were 91.3% (90% CI 74.7%–97.2%), 86.9% (90% CI 69.5%–94.7%), and 86.3% (90% CI 68.1%–94.5%), respectively. Improvements were noted in neurologic disability with a median change in expanded disability status scale (EDSS) of 20.5 (interquartile range 21.5 to 0.0; \( P \leq 0.001 \)) among participants who survived and completed the study.

Contributed by Srijithesh P.R.


In this study, the authors aimed to evaluate the effect of concomitant and adjuvant oral temozolomide with the conventional short course radiotherapy after surgical excision of glioblastoma in elderly patients. The role of temozolomide in these patients is yet to be proven unlike their younger counterparts. 562 patients (65 years of age or older) were randomized into two groups comprising 281 patients each. The group which received temozolomide along with the short course radiotherapy (40 Gy in 15 fractions) had significantly better overall (9.3 months vs. 7.6 months; odds ratio [OR] = 0.67; 95% confidence interval [CI] 0.56 to 0.80; \( P < 0.001 \)) as well as progression free survival (5.3 months vs. 3.9 months; OR = 0.50; 95% CI, 0.41 to 0.60; \( P < 0.001 \)). In addition, among 165 patients with methylated O6-methylguanine–DNA methyl transferase (MGMT) status, the median overall survival...
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received 5 µg, each, the IVM group received 100 µg, these groups were randomized into each group. The intrathecal morphine use was well tolerated by the elderly patients.

In this study, the authors evaluated the central mechanisms underlying the increased risk of cardiovascular disease in individuals with heightened stress. 293 patients aged 30 years or older (median age 55 years) were included in the study. These patients did not have any known cardiovascular disease or active cancer disorders at the time of inclusion in the study. They underwent 18F-fluorodeoxyglucose PET/CT of the brain to measure the baseline amygdalar activity. Additionally, they underwent evaluation of the bone-marrow activity and the arterial inflammation. In a separate cross-sectional study, the relation between the perceived stress, the amygdalar activity, the arterial inflammation and C-reactive protein were studied. 22 of these patients developed a cardiovascular disease event during median follow-up of 3-7 years. Amygdalar activity was strongly associated with increased bone-marrow activity (r = 0.47; P < 0.0001), arterial inflammation (r = 0.49; P < 0.0001), and risk of cardiovascular disease events (OR 1.59, 95% CI 1.27–1.98; P < 0.0001). Perceived stress was associated with amygdalar activity (r = 0.56; P = 0.0485), arterial inflammation (r = 0.59; P = 0.0345), and C-reactive protein (r = 0.83; P = 0.0210). Thus, the authors concluded that the amygdalar activity independently and robustly predicted cardiovascular disease events via increased bone-marrow activity and arterial inflammation. This finding may have therapeutic interest in future studies.

In this randomized blinded study, the authors compared the effect of intrathecal morphine to that of intravenous morphine on postoperative pain after posterior lumbar surgery in an attempt to provide novel data on this subject. 25 patients were randomized into each group. The intrathecal morphine (ITM) group received 100µg while the intravenous group (IVM) received 5±2mg morphine delivered over 24hours at 2mL/h following minimally invasive posterior lumbar fusion. Different parameters noted were VAS score at 0, 6, 12, 24 hours, mobilization out of bed at 6 hours, duration of hospital stay and various complications like lower limbs paresthesias, urinary retention at 6 and 12 hours, nausea, vomit, itch, and constipation. A lower VAS score, a reduction in constipation, lower limbs paresthesia, or urinary retention at 12 hours were observed in the ITM compared to the IVM group. No patients in either group developed nausea, vomiting or itching. Although urinary retention was observed more frequently in ITM group at 6 hours, the patients could be mobilized out of the bed earlier than in the IVM group. Therefore, this study established the safety as well as efficacy of low dose intrathecal morphine after minimally invasive lumbar fusion surgery.

In this study, the authors attempted to identify the true incidence of atrial fibrillation (AF) in patients presenting with acute ischemic stroke (AIS) using an enhanced and prolonged rhythm monitoring using Holter electrocardiogram. Elderly (>60 years) AIS patients (symptoms for 7 days or less) with sinus rhythm and without history of atrial fibrillation were included in this study. Patients with a severe ipsilateral carotid or intracranial artery stenosis were excluded. The enhanced and prolonged monitoring group (i.e., 10-day Holter-electrocardiogram [ECG]-monitoring at baseline, and at 3 months and 6 months of follow-up, n = 200) and the standard care procedures (i.e., at least 24 h of rhythm monitoring, n = 198) were the two groups compared in this study. The occurrence of atrial fibrillation or atrial flutter (30 sec or longer) within 6 months after randomization and before stroke recurrence constituted the primary endpoints. The difference in the incidence of atrial fibrillation after 6 months between the enhanced and prolonged monitoring group (27 patients, 14%) and the control group (n = 9, 5%) was found to be statistically significant (absolute difference 9.0%; 95% CI 3.4–14.5; P = 0.002). Thus, the study highlighted the utility of continuous ECG monitoring in these patients to detect the incidence of atrial fibrillation as a potential cause of AIS.

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In this study, the authors aimed to devise a novel scoring system, named as the Asan Intracranial Meningioma Scoring System, named as the Asan Intracranial Meningioma Scoring System, to estimate the risk of rapid tumor growth in intracranial meningiomas to aid in treatment decision making. 232 patients harboring a non-operated intracranial meningioma were followed radiologically over 16 years. 25.4% of these patients showed a rapid growth, defined as an increase in the size of the tumor by ≥2 cm3/year. The probability of rapid tumor growth was determined using a specialized formula. The predictors of rapid tumor growth on multivariate analysis were

Contributed by Dr. Kuntal Kanti Das


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tumor size (OR 1.07, \( P = 0.000 \)), absence of calcification (OR 3.87, \( P = 0.004 \)), peritumoral edema (OR 2.74, \( P = 0.025 \)), and hyperintense or isointense signal on T2-weighted magnetic resonance imaging (OR 3.76, \( P = 0.049 \)). These predictors were given different scores and the additive total score was calculated. The risk of rapid tumor growth was estimated to be <10% when the total score was 0–2, 10%–50% when the total score was 3–6, and ≥50% when the total score was 7–11. The authors claimed that this scoring system will help in taking treatment decisions (whether or not to as well as how to observe or operate) in small meningiomas.

Contributed by Dr. Kuntal Kanti Das


In this study, the authors examined the value of cerebral microdialysis (CMD) in the diagnosis of delayed cerebral ischaemia (DCI) in poor grade aneurysmal subarachnoid haemorrhage (SAH) patients. The authors examined 20 comatose patients with a SAH with hourly sampling of cerebral extracellular lactate/pyruvate ratio (LPR) and glucose as a part of CMD monitoring and brain perfusion CT (PCT). They defined DCI when PCT (8 ± 3 days after SAH) demonstrated a cerebral blood flow <32.5 mL/100 g/min with a mean transit time >5.7 s. The clinicians were blinded to CMD data to remove bias from the study. DCI occurred in 9 patients (45%). The occurrence of DCI was associated with higher CMD LPR (51 ± 36 vs 31 ± 10 in patients without DCI, \( P = 0.0007 \)) and lower CMD glucose (0.64 ± 0.34 vs 1.22 ± 1.05, \( P = 0.0005 \)). In patients with DCI, CMD changes over the 18 hours preceding PCT diagnosis revealed a pattern of CMD LPR increase (\( P = 0.04 \)) with simultaneous CMD glucose decrease (\( P = 0.03 \)). The patients without DCI did not show any significant CMD changes. Thus, the authors claimed that CMD may be able to diagnose DCI much before the imaging parameters start to change and that there existed a specific pattern in which the metabolites change in response to the cerebral ischaemia.

Contributed by Dr. Kuntal Kanti Das


This meta-analysis aimed to assess the safety and the efficacy of intensive blood pressure lowering in patients with acute intracranial hemorrhage (ICH) in improving clinical outcomes. The authors conducted a thorough search of the randomized control trials conducted in patients with acute ICH, randomised to either intensive blood pressure (BP)-lowering or standard BP-lowering treatment protocols. They calculated the pooled odds ratio (OR) for the 3-month mortality (safety outcome) and 3-month death or dependency (modified Rankin Scale ≥3; efficacy outcome). The association between the treatment arm and ICH expansion at 24 hours was also investigated. Analyzing a total of 4360 patients from five eligible studies, the authors found that the risk of 3-month mortality was similar between the two groups (OR: 0.99; 95% CI: 0.82 to 1.20, \( P = 0.909 \)). As far as the 3-month death or dependency risk was concerned, intensive BP-lowering treatment showed a trend for a lower risk compared with standard treatment (OR: 0.91; 95% CI: 0.80 to 1.02, \( P = 0.106 \)). Similar trend for a lower risk was also observed with respect to the ICH expansion (OR: 0.82; 95% CI: 0.68 to 1.00, \( P = 0.056 \)). Thus, the authors concluded that in the absence of any specific contraindication, intensive acute BP lowering in acute ICH is probably safe. Its clinical benefits in terms of functional outcomes and significant hematoma expansion at 24 hours are, however, still unsubstantiated.

Contributed by Dr. Kuntal Kanti Das