

P.086**A randomized trial of a simple intervention to improve neurosurgery rotation experience for senior medical students**

CS Ahuja (Ajax)* NM Alotaibi (Toronto) S Wang (Toronto) B Davidson (Toronto) T Mainprize (Toronto) AV Kulkarni (Toronto) J Spears (Toronto) E Massicotte (Toronto)

doi: 10.1017/cjn.2018.188

Background: High volumes, ill patients, and steep learning curves can make neurosurgical rotations challenging for medical students. Furthermore, existing rotations often lack neurosurgery-specific orientation materials and level-appropriate pre-reading resources reducing the educational yield of short rotations. This is compounded by the lack of mandatory neurosurgical rotations across medical schools. We hypothesized that a “Neurosurgery Clerkship Manual” covering key orientation, knowledge, and practical topics would enhance educational experiences and generate sustained knowledge retention. **Methods:** Students rotating through neurosurgery at three hospitals were randomized to receive (intervention) or not receive (control) free access to the manual before their rotation. Participants completed surveys before, immediately after, and 4-weeks after the rotation assessing expectations, experiences, and clinically-relevant knowledge. **Results:** 61 participants were randomized between 2014 and 2017 with 43 (70.5%) completing all three questionnaires. Baseline demographics, characteristics, and experiences were not significantly different. Those receiving the manual reported increased rotation enjoyment ($p=0.02$), decreased stress levels ($p=0.05$), and a greater feeling of being “part of the team” ($p=0.01$). There were also reductions in feeling like they were “not learning” ($p=0.01$). Finally, those receiving the manual demonstrated significantly better knowledge after the rotation (91.6% vs 80.9%; $p=0.04$) which was sustained at 4-weeks post-rotation (89.2% vs 79.0%; $p=0.05$). **Conclusions:** A simple and inexpensive clerkship manual can improve the neurosurgery rotation experience and knowledge retention for medical students.

NEUROTRAUMA**P.087****“Reported Brain Injury” Time trends within two Canadian health surveys over two decades**

KE Gordon (Halifax)* S Kuhle (Halifax)

doi: 10.1017/cjn.2018.189

Background: An “epidemic” of concussions has been widely reported. We explored the annual incidence of reported concussion or other brain injury, over 20 years within Canada in order to explore the magnitude of this reported epidemic. **Methods:** Two Canadian nationally representative health surveys have serially collected injury data associated with disability. The National Population Health Survey (NPHS) (1994-9) collected data on “concussion”, and the Canadian Community Health Survey (CCHS) (2000-current) has collected data on “concussion or other brain injury”. Data on respondents 12 years and older reporting concussion with or without other

brain injury within the past year were examined in order to produce serial incidence data. **Results:** Nationally representative data were available biennially from 1994/95 through 2013/14 with the exception of 2007/08 and 2011/12. The incidence of reported concussions, or concussions and other brain injury has been stable until 2005/06 when the reported annual incidence started an upward slope to levels 250% higher ($p<0.001$) without any apparent stabilization by 2013/14, when approximately 1 in 200 Canadians 12 years and older report concussion or other brain injury as their most significant injury associated with disability in the previous 12 months. **Conclusions:** There is currently a pandemic of reported brain injury in Canada.

P.088**Antithrombotic agents and traumatic brain injury in the elderly population: hemorrhage patterns and outcomes**

P Scotti (Montreal)* J Troquet (Montreal) C Seguin (Montreal) B Lo (Montreal) J Marcoux (Montreal)

doi: 10.1017/cjn.2018.190

Background: In the elderly population, use of antithrombotic therapy (AT), antiplatelets (AP – aspirin, clopidogrel) and/or anticoagulants (AC – warfarin, DoAC – Dabigatran, Rivaroxaban, Apixaban), to prevent thrombo-embolic events must be carefully weighed against the risk of intracranial hemorrhage (ICH) with trauma. We hypothesize that for all patients 65yo+ with head trauma, those on AT will be more likely to sustain a traumatic brain injury, ICH, and poorer outcomes. **Methods:** Data was collected from all head trauma patients 65yo+ presenting to our tertiary trauma center (level 1) over a 24-month period; age, gender, injury mechanism, medications, International Normalized Ratio, reversal therapy, Glasgow Coma Scale (GCS), ICH, surgery, Extended Glasgow Outcome Scale score (GOSE) and mortality. **Results:** 1365 patients were identified; 724 on AT (413 AP, 151 AC, 59 DoAC, 48 2AP, 38 AP+AC, 15 AP+DoAC) and 474 not (non-AT). When adjusted for covariates, AT patients were more likely to have ICH ($p=0.0004$), more invasive surgical interventions ($p=0.0188$), functional dependency ($GOSE\leq 4$; $p<0.0001$) and mortality ($p<0.0001$). Risk of mortality is notably high with 2AP (OR 5.74; $p=0.0003$) and AC+AP (OR 4.12; $p=0.0118$). **Conclusions:** Elderly trauma patients on AT, especially combination therapy, have higher risks of ICH and poorer outcomes compared to those who are not.

P.089**AMPA receptor modulation as a therapeutic strategy to enhance survival of spinal cord neural stem cells**

LD Hachem (Toronto)* AJ Mothe (Toronto) CH Tator (Toronto)

doi: 10.1017/cjn.2018.191

Background: Transplantation of neural stem/progenitor cells (NSPCs) following spinal cord injury (SCI) is a promising strategy to enhance regeneration but is limited by poor survival of grafted cells. Recently, we demonstrated for the first time that the excitatory neurotransmitter glutamate, which is released after SCI, promotes survival/proliferation of spinal cord NSPCs via the AMPA subtype of glutamate receptors. Here, we examine the therapeutic potential of selective AMPA receptor modulation on NSPC survival using allosteric AMPA receptor modulators known as ampakines. **Methods:**

NSPCs from the periventricular region of the adult rat spinal cord were treated with ampakines CX614 and CX546 for 72h either alone or in the presence of low-dose glutamate (50 μ M). **Results:** Treatment with CX-546 or CX-614 in the presence of glutamate led to a significant increase in live cell numbers. This was due to both a reduction in cell death and increase in cellular proliferation. Ampakine/glutamate treatment led to a significant increase in cell survival compared to controls in the setting of oxidative stress. **Conclusions:** We present the first examination of the effect of allosteric AMPA receptor modulators on adult spinal cord--derived NSPCs. Positive modulation of AMPA receptors may be a promising therapeutic strategy in the sub-acute/chronic phases after SCI to increase survival of endogenous or transplanted NSPCs.

NEUROVASCULAR, STROKE AND NEUROINTERVENTIONAL

P.090

Risk factors and etiology of stroke in young adults: a 6-years retrospective hospital-based study, OMAN

AM Al Hashmi (Muscat)* S Jose (Muscat) S Al Mawali (Muscat)

doi: 10.1017/cjn.2018.192

Background: Stroke in the young is particularly tragic because of its potential for life time disability. Although a large number of studies have been published Worldwide. Very few have looked at etiologies in the youth of the Middle East, and none have focused on Oman. **Methods:** Retrospective, single center study, carried out at the Royal Hospital in Muscat. Chart review identifying all patients under 50 years of age admitted for acute stroke from 2009-2014. We analyzed the detailed history, examination and brain imaging (CT or MRI) for each case. We identified 588 young patients, 163 of these were excluded due to other diagnosis or absence of neuroimaging (CT or MRI). **Results:** Out of the 425 stroke cases, 67.3% were men. IS occurred in 69.6% compared to 30.4% for HS. Hypertension was the number one risk factor for both IS and HS, with a prevalence 50.7% and 60.5% respectively. DM was the second leading risk factor, with a prevalence of 32.1% in IS and 27.1% in HS. Underlying etiologies were identified in only 35.5% of cases in IS and 29.5% in HS. Cardiac etiology and vasculopathy were commonest for IS. Aneurysm was the main underlying etiology for HS. **Conclusions:** IS was more frequent than HS. Hypertension and DM were the leading risk factors for both stroke subtypes. Cardioembolism and vasculopathy were the main etiologies for IS. Cerebral aneurysm for HS.

P.091

Small unruptured intracranial aneurysms: the natural history in Saskatchewan

J Mann (Saskatoon)* U Ahmed (Saskatoon) M Kelly (Saskatoon) L Peeling (Saskatoon) K Meguro (Saskatoon)

doi: 10.1017/cjn.2018.193

Background: The natural history of small unruptured intracranial aneurysms (UIAs) <7mm is 0 to 1.3% per year. Our centre provides cerebrovascular care for the entire province allowing for

long-term follow-up. We studied the safety of observation for aneurysms <7mm. **Methods:** We performed a retrospective chart review of patients with intracranial aneurysm referred to our centre between July 2008 and April 2015. Aneurysm characteristics and current status (followed, treated, not followed), were collected along with patient factors. Follow-up duration for each aneurysm was used to calculate total follow-up in aneurysm-years. Statistical evaluation consisted of multivariate analysis and logistic regression analysis. **Results:** 428 patients harbouring 497 aneurysms <7mm were identified. 67 presented with rupture. Of the remaining 430 aneurysms, there was a 9.3% treatment rate. 2 cases of rupture occurred in those patients who were followed, creating a 0.5% rupture rate. 325 aneurysms were followed for 631.3 total cumulative aneurysm-years, an average of 1.9 aneurysm-years. Smoking status and hypertension associated with presence of aneurysm ($p \approx 0.009, 0.026$, respectively). **Conclusions:** In our selected patient group there is a low yearly rate of aneurysm rupture, and observation of aneurysms <7mm is safe. Hypertension and smoking were associated with the development of aneurysm. 9.3% of patients were treated, likely leading to a reduced natural history risk.

P.092

Eagles and Talons: A case of cervical artery dissection from Eagle syndrome and fibromuscular dysplasia

S Wasyliw (Saskatoon)* G Hunter (Saskatoon)

doi: 10.1017/cjn.2018.194

Background: Eagle syndrome (also known as stylohyoid syndrome) and fibromuscular dysplasia (FMD) are rare conditions that have both been shown to be associated with cervical artery dissections (CAD). Direct mechanical injury from a neighboring bony fragment can produce arterial dissections and is the proposed mechanism in Eagle syndrome. The etiology of FMD remains unclear, however, similar shearing stresses have been proposed. We present a case in which both of these conditions were present. **Methods:** Case report **Results:** A previously healthy 52 year old male presented with an acute left MCA syndrome with computer tomography angiography followed by conventional angiography confirming a complete occlusion of the left ICA at the carotid bifurcation with evidence of a dissection of the proximal cervical carotid artery. Luminal irregularities proximal to the dissection and also of the right ICA were in keeping with fibromuscular dysplasia. A carotid stent was placed and a thrombectomy was performed for a proximal left M2 occlusion. On further review of the CT, the patient had markedly elongated styloid processes bilaterally, meeting criteria for Eagle syndrome. **Conclusions:** Previous literature has not described these two conditions co-existing. We question whether chronic mechanical stress from an elongated styloid process could lead to arteries having an irregular or beading appearance resembling fibromuscular dysplasia.