

NEU-S01

Nomogram and Carotid Risk Score for Predicting Moderate or High Degree Carotid Atherosclerosis Among Asymptomatic Elderly Recycling Volunteers*Shinn-Kuang Lin**Department of Neurology, Taipei Tzu Chi Hospital, New Taipei City, Taiwan, School of Medicine, Tzu Chi University, Hualien, Taiwan*

Carotid atherosclerosis is associated with cardiovascular and cerebrovascular events. We explored an appropriate method for selecting participants without ischemic cerebrovascular disease but with various comorbidities eligible for a carotid ultrasound. This was a retrospective subgroup analysis of the carotid plaque burden from a previous study involving a vascular and cognitive survey of 956 elderly recycling volunteers (778 women and 178 men; mean age: 70.8 years). We used carotid ultrasound to detect the carotid plaque and computed the carotid plaque score (CPS). A moderate or high degree of carotid atherosclerosis (MHCA) was defined as CPS >5 and was observed in 22% of the participants. The CPS had positive linear correlations with age, systolic blood pressure, and fasting glucose. We stratified the participants into four age groups: 60-69, 70-74, 75-79, and ≥80 years. Multivariable analysis revealed that significant predictors for MHCA were age, male sex, hypertension, diabetes mellitus, hyperlipidemia, coronary artery disease, and a nonvegetarian diet. Coronary artery disease and advanced age were the two strongest predictors. We chose the aforementioned seven significant predictors to establish a nomogram for MHCA prediction. The area under the receiver operating characteristic curve in internal validation with 10-fold cross-validation and the classification accuracy of the nomogram were 0.785 and 0.797, respectively. We presumed people who have a ≥50% probability of MHCA warranted a carotid ultrasound. A flowchart table derived from the nomogram addressing the probabilities of all models of combinations of comorbidities was established to identify participants who had a probability of

MHCA ≥50% (corresponding to a total nomogram score of ≥15 points). We further established a carotid risk score range from 0 to 17 comprising the seven predictors. A carotid risk score ≥ 7 was the most optimal cutoff value associated with a probability of MHCA ≥50%. Both total nomogram score ≥15 points and carotid risk score ≥7 can help in the rapid identification of individuals without stroke but who have a ≥50% probability of MHCA-these individuals should schedule a carotid ultrasound.

NEU-S02

Application of Carotid Duplex to Predict Unplanned Emergency Apartment Revisits within 72 Hours of Acute Ischemic Stroke: A Pilot Study*Sheng-Feng Lin**Department of Emergency Medicine, Taipei Medical University Hospital*

ABCD2 score helps predict early stroke recurrence after transient ischemic attack (TIA). Carotid ultrasound is reported a potential tool to expedite stroke risk assessment. Patients with TIA who consecutively presented to the ED were included. ABCD2 score and the modified ABCD2-I score were used after employing findings of carotid duplex with any side of internal carotid artery stenosis ≥ 50%. The Cox proportional hazards analysis revealed patients at high risk group were significantly associated with revisits to the ED within 72 hours for subsequent acute ischemic stroke according to the ABCD2-I (c50) (HR: 2.92, P = .0286) scoring models but not the ABCD2 (HR: 1.12, P = .7427) scoring model. ABCD2-I scores help predict early revisits to the ED within 72 hours for acute ischemic stroke.

NEU-S03

Correlation between Cerebral Hemodynamics and Cognitive Function of Healthy Elderly in Community

Nai-Fang Chi

*Department of Neurology, School of Medicine,
National Yang Ming Chiao Tung University,
Division of Cerebrovascular Diseases, Neurological
Institute, Taipei Veterans General Hospital*

In patients with cerebrovascular diseases, decreased cerebral blood flow, increased cerebrovascular resistance were found associated with cognitive impairment. The knowledges of cerebral hemodynamics and cognitive function of healthy elder people are lacking, but emergent evidence indicate that the impaired cerebral hemodynamics predict the onset the cognitive dysfunction. In this study, we enrolled 200 healthy elderly from Beitou District of Taipei, cerebral hemodynamics were evaluated by using ultrasound, cerebral structure features were evaluated by using MRI, and cognitive function test including Montreal Cognitive Assessment (MoCA), California Verbal Learning Test (CVLT), and Boston Naming Test (BNT) were performed. We found that cerebral autoregulation index (phase shift between cerebral blood flow and blood pressure waveforms) was associated with the cognitive performance, whereas the burden of small vessel diseases in brain MRI was not associated with cognitive performance. Therefore, we concluded that subclinical cognitive impairment exists in healthy elderly in community, which was associated with cerebral hemodynamics rather than the burden of small vessel diseases.

NEU-S04

Neurosonology in Critical Care

Sung-Chun Tang, MD, PhD.

*Department of Neurology, National Taiwan
University Hospital*

Ultrasound is commonly used in the cerebrovascular evaluation of stroke patients. It's a convenient and non-invasive technique that enables to measure and monitor the hemodynamics in neck vessels and basal cerebral arteries. Besides the

routine evaluation of large vessel status, it also provides the clinical physician a quick, convenient, and repeatable tool in neurological monitoring beyond classical intensive care in the daily neuro-intensive care medical practice. Previous studies suggested that the combination of carotid duplex, and transcranial Doppler/transcranial color-coded sonography can obtain the information of vascular stenosis, occlusion and recanalization, 3rd ventricle midline shift, acute hematoma expansion and increased intracranial pressure. In this talk, I will briefly introduce the current applications of neurosonology in critical care and then address/discuss the main limitations in transforming this knowledge/skill into daily practice from our own experience.

NEU-S05

Essentials of POCUS in Neurocritical Care: From Curriculum Design to Assessment Tools

Chi-Hung Liu, MD, MSc.

*Stroke Center and Department of Neurology,
Chang-Gung Memorial Hospital, Linkou, College of
Medicine, Chang Gung University*

Point-of-care ultrasound (POCUS) is an important and promising tool in clinical practice, particularly in emergency and critical care medicine. Utility of POCUS in neuro-critical care should also be an important issue. In the era of transform of medical education in neurology field, it is necessary to incorporate the essentials of ultrasound use during residency or fellowship training. In this talk, we're trying to review the contents of the assessment tools, the essentials and curriculum designs of POCUS ultrasound and neurosonography use in neurocritical care.

NEU-S06

TCD Monitor of Cerebral Hemodynamics after Thrombolysis or Thrombectomy

Shu-Fan Kuo

*Department of Neurology, MacKay Memorial
Hospital, Taipei, Taiwan*

Recanalized the occluded artery by intravenous thrombolysis or mechanical thrombectomy and keep sufficient blood supply are crucial for early management of the acute stroke. We can use MRI and CT perfusion to assess the reperfusion after intervention, however, these imaging techniques cannot provide real time information as we need to monitor the hemodynamics continuously. Transcranial Doppler sonography (TCD) is a perfect tool to perform at bedside. By monitoring the hemodynamic change, it may help us to identify reocclusion and hyperperfusion syndrome post thrombectomy. TCD can also guide clinicians in making tailored blood pressure control based on blood flow measurement. In this section, we will discuss about the role of TCD in evaluating the patient receiving intravenous thrombolysis or intraartery thrombectomy.

NEU-S07

Cerebral Autoregulation Monitoring in Acute Ischemic Stroke Patients

Shun-Fan Yu, Lung Chan, Chaur-Jong Hu,

Han-Hwa Hu.

Neurology Department, Shuang-Ho Hospital.

Background: Cerebral autoregulation is a process that regulate blood perfusion in brain. Because the central nerve system is very sensitivity

to hyper- or hypoperfusion, the cerebral autoregulation is very important for mammals to react with several biological conditions included peripheral blood pressure, heart rate, and even emotional stress.

In acute stage of ischemic stroke, the cerebral autoregulation may be activated to maintain cerebral perfusion. But we found that adequate autoregulation may also be interrupted if uncontrolled hypertension and resulted in post-infarction hemorrhagic transformation. Optimal blood pressure control has become an issue for clinical physicians to provide better outcome for stroke patients.

Method: Cerebral autoregulation monitoring has become a potential tool for individualized optimal blood pressure (optimal BP) measuring. The cerebral autoregulation could be quantified by cerebral artery blood flow Doppler echography and in response to changes in cerebral perfusion pressure or mean arterial pressure.

We will demonstrate several cases of acute stroke, include acute large ischemic stroke and had received endovascular therapy (EVT). The autoregulation monitoring may provide optimal BP for post-EVT care and may also give us further predictive factors for vascular dementia. We will also provide the autoregulation before and after intracranial artery stent insertion in large artery atherosclerosis patients.

Conclusion: The cerebral autoregulation is a dynamic process and may be influenced by many biological situations or diseases. By monitoring the autoregulation we will have further understanding about the relationship between neurological symptoms and cerebral perfusion.