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Relationship between Diagonal Earlobes Crease and Ischemic Stroke Risk

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Abstract

Introduction: Diagonal earlobes crease (DELC), or Frank's sign, was first described in 1973 by the American physician (T. Frank) in the *New England Journal of Medicine* in a case series of patients with coronary artery disease. It is a diagonal crease in the earlobe which starts from the tragus to the edge of the auricle at an angle of 45 degrees in varying depths. In an autopsy study in 2020, Stoyanov et al, described DELC earlobes among a cardiac patient sample. Histopathological examination of DELC-positive earlobes showed myoelastofibrosis in the arterial vessel located at the base of the earlobe, fibrosis, and Wallerian-like degeneration with eosinophilic inclusions in the peripheral nerves. The authors stated that this location is a line of merging of preformed prenatal structures, and thus it may be susceptible to chronic hypoxia–reoxygenation injury due to atherosclerosis.

As DELC has been proposed as a marker of generalized atherosclerosis, studies have investigated whether individuals with DELC have a shortened telomere, correlating with accelerated cell turnover and premature aging, leading to atherosclerosis. Further, DELC has been suggested as a useful dermatological indicator of accelerated aging process, as suggested by excessive telomere loss, and a useful indirect marker of high-risk metabolic syndrome patients. A higher correlation has also been found between coronary heart disease and DELC as a risk indicator than between coronary heart disease and risk factors like arterial hypertension, cigarette smoking, or diabetes mellitus. Our study was designed to further investigate the relationship between DELC and ischemic stroke and if DELC has potential as a simple, reliable, noninvasive marker of future ischemic stroke. If it does, then it could be possible for physicians and healthy people to do early-warning monitoring of earlobe changes for potential ischemic stroke Events.

Objective: The aim of study was to examine the relationship between DELC and ischemic stroke.

Methods: This prospective study recruited 175 consecutive acute ischemic stroke patients admitted to the Stroke Unit of Srinagarind Hospital, Faculty of Medicine, Khon Kaen University between May 2021 and August 2021. Clinical data included age, gender, underlying disease, clinical presentation, vital signs, brain computed tomography and DELC assessed for both ears. The study was approved by the Human Ethics Research Committee of Khon Kaen University, Thailand.

Results: All patients were assessed on clinical presentation and brain computed tomography (CT) findings. There were 31 patients with transient ischemic attacks (17.7% of the patients) and 144 patients with cerebral infarction (82.3%). One hundred and 3 patients were male (58.9%) and 72 were female (41.1%). The top three clinical presentations were hemiparesis (69.7%), dysarthria (63.4%), and facial palsy (41.1%). One hundred and thirty-one patients (74.9%) had underlying diseases; hypertension (24.2%), diabetic mellitus (14.4%), atrial fibrillation (4.9%), chronic kidney disease (2.0%), dyslipidemia (8.0%), valvular heart disease (2.3%), coronary heart disease (2.6%), previous stroke (8.0%), and other diseases (8.4%). Only 44 patients (25.1%) had no underlying disease.

Frank's sign (DELC) was present in only 13 patients (7.4%). There were similar proportions of major underlying conditions, hypertension, and diabetic mellitus for both groups, and no differences apparent for gender or old age. On CT scans both DELC and non-DELC patients showed lacunar infarction as the major source of ischemic stroke.

Conclusion: Due to our very small sample of DELC patients, we could draw no conclusions about the relationship between DELC and ischemic stroke and its predictive utility as a biomarker for ischemic stroke. Given the much higher proportions of DELC patients reported in international literature we raise the possibility of physiological, genetic, or ethnic differences in Thai, or Asian samples, for future research.

Etiology and Factors Related Outcomes of Longitudinally Extensive Transverse Myelitis in a University Hospital, Northeast Thailand

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Abstract

Background: Longitudinally extensive transverse myelitis (LETM) had a variety of etiology which have different treatments for each disease. To reduce diagnostic errors and delay of treatments, complete and systematic investigation plays an important role to achieve the authentic diagnosis.

Objective: To review clinical features, neuroimaging, laboratory testing, etiology, and prognosis of LETM patients in a University Hospital, Northeast Thailand.

Methods: A cross-sectional retrospective descriptive study was performed. We included 40 patients who were diagnosed with LETM in Srinagarind Hospital between January 2015 to October 2021 and reviewed their demographic data, clinical presentation, Expanded Disability Status Scale, MRI spinal cord, laboratory testing included serum aquaporin 4 antibody, cerebrospinal fluid oligoclonal band, cerebrospinal fluid profile, diagnosis, and treatment. Factor related to the outcome of LETM was analyzed.

Results: We included 40 patients, there were 21 females (52.5%), the mean age of onset was 48.4 years (SD=15.8). NMOSD was the most common etiology of LETM (n=15), followed by infection (n=5), SLE (n=5), idiopathic causes (n=4), CIS (n=3), MS (n=1), spinal dural AVF (n=2), ADEM (n=2), either 1 had spinal cord infarction, schwannoma, and vitamin B12 deficiency. Most patients in this study had severe LETM (n=31). Complete cord had significantly poorer outcome (p-value=0.003), while dorsolateral and anterior cord had better outcome (p-value=0.046, 0.046).

Conclusion: NMOSD was the most common etiology of LETM, and a prior attack of myelitis was led to the diagnosis of NMOSD. Complete cord lesion on axial spinal cord MRI was sensitive to NMOSD but not specifically. Factors that related prognosis of LETM included complete cord lesion on MRI axial view was related the poorer outcome, while dorsolateral and anterior cord lesion had a better outcome.

Association of Chronic Obstructive Pulmonary Disease with Adverse Outcomes in Hospitalized Acute Stroke in Thailand: A Matched Cohort Study

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Abstract

Introduction: Previous studies have found an association between chronic obstructive pulmonary disease (COPD) and the increased rate of post-stroke mortality. However, there is a paucity of data evaluating this association especially in Thai population

Objective: To examine the impact of COPD on mortality and complications among hospitalized stroke patients in Thailand

Methods: A matched cohort study was performed. The information of stroke patients with COPD and non-COPD was extracted from the Universal Coverage Health Security Insurance Scheme Database of Thailand covering the data from October 2004 up to January 2017. Post-stroke in-hospital mortality and adverse outcomes were assessed using logistic regression analysis.

Results: A total of 17,575 hospitalized stroke patients with COPD were identified and matched to controls (1:1) by age, sex, stroke subtypes and comorbidities [hypertension, diabetes, dyslipidemia, atrial fibrillation, ischemic heart disease, heart failure and previous stroke/Transient ischemic attack (TIA)]. COPD patients were significantly associated with higher odds of in-hospital death: (OR=1.22; 95%CI 1.14-1.29; P<0.001) and length of stay (P<0.001) compared to those without COPD. Patients with COPD also had increased odd ratio of pneumonia (OR=1.97; 95%CI 1.84-2.11), urinary tract infection (OR=1.37; 95%CI 1.25-1.51), sepsis (OR=1.53; 95%CI 1.37-1.72), cardiac arrest (OR=1.63; 95%CI 1.32-2.00), respiratory failure (OR=1.84; 95%CI 1.73-1.97) and acute kidney injury (OR=1.27; 95%CI 1.15-1.41). On the other hand, there is no significant difference in odd ratio of myocardial infarction and intracerebral hemorrhage between two groups.

Conclusion: COPD is associated with poor stroke outcomes considering higher odds of inpatient mortality and risk of developing serious post-stroke complications.

Long Term Memory Outcome in Transient Global Amnesia (TGA) Patients with Abnormal MRI

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Abstract

Introduction: long-term neurocognitive outcome in TGA patients was inconclusive and few studies mentioned about the effect of MRI characteristics.

Objectives: To explore long-term memory outcome of the TGA patients with abnormal MRI in hippocampal area and effect of characteristics of lesions on memory function.

Materials and Methods: From 2006 to 2020, TGA patients whose MRI brain showed restricted diffusion in the hippocampus were included in this study. Controls are age and sex matched healthy volunteer. Patients with neurological or psychiatric impairment were excluded. MOCA and comprehensive neuropsychological battery tests were done to evaluate cognitive function in visual and verbal memory domain in immediate and delay memory type.

Results: 26 TGA patients and 26 controls were included in this study. Baseline characteristics and MOCA score were not significantly different between group. In neuropsychological battery tests, TGA had worse performance than control in immediate visual memory test (8.88 ± 2.16 vs 10.12 ± 1.7 , $t = 2.281$, $p = 0.027$). Visual reproduction recognition score was significantly lower in TGA ($p = 0.037$). There were main effects on group study (better performance in control, $F = 4.19$, $p = 0.046$), memory domain (better performance in verbal test, $F = 4.284$, $p = 0.044$) and memory type (better performance in immediate memory, $F = 31.236$, $p < 0.001$). There was no effect of location and number of lesions on memory outcome.

Conclusion: We demonstrated impairment in long term memory outcome in TGA patients who have abnormal MRI brain signal compared to control.

Is Anti-Seizure Drug the Culprit of SUDEP?

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Abstract

Objective: HRV reduction is a potential biomarker for sudden cardiac death. Whether anti-seizure drugs (ASDs) are related to the reduction in HRV in epilepsy or related to SUDEP has been controversial. This study aimed to study the effects of ASDs, adjusted with reported factors associated with SUDEP on HRV parameters.

Materials and Methods: We recruited all patients who were admitted in our epilepsy monitoring unit for 24-hour video-EEG monitoring, between January 2013 and December 2021. Two 5-minute ECG epochs were selected in each patient. HRV analysis with Python[®] software was performed. The imputed datasets were used for linear regression analysis to assess association between each ASD item and all HRV parameters. The effects of ASD on HRV parameters were subsequently adjusted with the significant clinical characteristics and the concomitant use of other ASDs respectively.

Results: Four ASDs including carbamazepine (CBZ), levetiracetam (LEV), lamotrigine (LTG) and clonazepam (CZP) were statistically significant associated with changes of sleep HRV parameters (BPM, SDNN, HF). Only CBZ showed negative effects with reduction in HRV, evidenced as lower SDNN, even when adjusted with concomitant use of other ASDs (β -coefficient = -11.385, $p = 0.045$) and had a trend of significance when adjusted with significant clinical characteristic of concurrent taking beta-blocker drug (β -coefficient = -10.663, $p = 0.052$). LEV and CZP showed opposite effects with increased HRV even when adjusted with significant clinical characteristics and the concomitant use of other ASDs.

Conclusion: CBZ showed negative effects on HRV. We proposed that CBZ should be cautiously used in patients with known risks for SUDEP i.e., advanced age, prolonged history of epilepsy, frequent GTCs and presence of nocturnal seizures. In addition, HRV assessment should be performed prior to commencing CBZ and re-performed in follow-up in case of prolonged use.

Development and Validation of the Thai Version of the Adult Epilepsy Self-Management Scale (Thai-ESMS)

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Abstract

Introduction: Epilepsy is a common chronic neurological disease. Self-management is an important strategy for helping people with epilepsy (PWE) control their seizures and improve their quality of life. To date, there are scarce standard measurement tools for assessing self-management practices.

Objectives: To develop and validate a Thai version of the Epilepsy Self-Management Scale (Thai-ESMS) for Thai people with epilepsy.

Materials and Methods: The translation of Thai-ESMS was created using the adaptation of Brislin's translation model. Content validity of the developed Thai-ESMS was independently assessed by 6 neurology experts and reported as item content validity index (I-CVI) and scale-CVI (S-CVI). We consecutively invited epilepsy patients at our outpatient epilepsy clinic during November to December 2021. Participants were asked to complete our developed 38-item Thai-ESMS. Based on the participant's responses, construct validity was evaluated using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). Cronbach's alpha coefficient was employed to evaluate internal consistency reliability.

Results: In total, 216 patients participated our study. Overall 38-item Thai ESMS scale showed high content validity (S-CVI = 0.89), well construct validity of 5 domains (5 factors with Eigenvalue > 1 upon EFA and good fitness index upon CFA), and good internal consistency (Cronbach's alpha 0.819). These were comparable to the original English version. However, some items or domains have poorer validity and reliability than overall scale. This included item #24, seizure management and safety management domains.

Conclusion: We developed a robust 38-item Thai ESMS which has high validity and good reliability. This can be used to help assess the magnitude of self-management skills in Thai PWE.

Drive or Not Drive: 3A-2F-VM App for Determination of Seizure Risk

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Abstract

Introduction: Restriction to drive in people with epilepsy (PWE) has been legislated as a state or a nation law. These regulations may not be applied to the patients who experience only one seizure i.e., first unprovoked seizure (FS) since rate of recurrence is significantly less. Due to different risk levels, individual risk assessment is essentially required in clinical practice in order to assist treating physicians better educate the patient chance of recurrence and safety issue regarding their driving.

Objectives: To develop a clinical prediction model for seizure recurrence in patients with FS and implement via Mobile Application.

Materials and Methods: We recruited all FS patients who had CT or MRI performed from our adult EEG database at the Chulalongkorn Comprehensive Epilepsy Center of Excellence (CCEC) during a period of January 1, 2010 to November 30, 2020. Previously reported significant factors associated with seizure recurrence after FS as well as detailed EEG/imaging findings and comorbidities and comedications were included as potential risk factors. We considered a first seizure recurrence as our study outcome. Univariate and multivariate Cox proportional hazard regression model was used. Assigning point to the significant factors was then performed based on their β -coefficients. Risk level according to sum points of individual patient was classified as low, medium and high. Associated risk of seizure recurrence, annual incidence rate of recurrence, and median time to seizure recurrence were reported.

Results: In total, 116 FS patients were recruited. Multivariate analysis revealed seven independent factors including attention deficit hyperactivity disorder (ADHD) (HR 5.39, 95% CI 1.30-22.43, $p = 0.020$), being on Antidepressants at the time of FS (HR 0.16, 95% CI 0.03-0.71, $p = 0.017$), Antiseizure medication started after the FS (HR 0.43, 95% CI 0.22-0.81, $p = 0.010$), Family history of epilepsy (HR 5.17, 95% CI 1.66-16.08, $p = 0.005$), Focal aware seizure as a seizure type of FS (HR 3.60, 95% CI 1.11-11.72, $p = 0.033$), Valvular heart disease as a comorbidity (HR 6.67, 95% CI 1.82-24.41, $p = 0.004$) and presence of intraparenchymal Microbleeds on MRI (HR 3.31, 95% CI 1.47-6.64, $p = 0.003$). These factors were assigned + 2, - 2, - 1, + 2, + 1, + 2 and + 1 points, respectively. The possible maximum total sum points were + 8 and the minimum was - 3. Individual sum points were classified as low (-3 to -1), medium (= 0) and high (+ 1 to + 8). High-risk FS patients carries highest recurrence rate of 89.47%, 124 per 100 FS patients will recur in one year with median time to first seizure recurrence of 4.32 months.

Conclusion: Our study provides another prediction model for seizure recurrence in patients with FS, called "3A-2F-VM App score". This can be used to assist physicians individually assess the patient's risk. Based on our prediction model, we recommend that the high-risk FS patients should be compulsory avoided from driving for at least 12 months.

Mortality, Functional Outcome and Predictive Factors in Post-stroke Seizures in King Chulalongkorn Memorial Hospital

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Abstract

Objectives: To identify clinical, radiographic features, prognosis and outcomes of post-stroke seizures (PSS) in King Chulalongkorn Memorial Hospital.

Materials and Methods: A retrospective cohort study was conducted to review 1,012 consecutive patients admitted in the stroke unit of King Chulalongkorn Memorial Hospital from June 2019 to August 2020. Among them, 862 (85.17%) patients were included in the study and 18 (2.09%) patients were PSS. We compared the demographic data, radiographic features, prognosis and outcomes between PSS and non-PSS group. We evaluated outcomes according to mRS and mortality at discharge, 3 months and 1 year follow-up.

Results: The median length of stay (8, IQR 6.25-12 and 4, IQR 3-7) and NIHSS score (18.5, IQR 15.25-20 and 4, IQR 2-11) in PSS group were higher than non-PSS group ($p < 0.001$), respectively. Atrial fibrillation, advanced cancer, cardiac emboli, progressive stroke, cortical involvement, multilobar infarction and hemorrhagic transformation in PSS were higher than non-PSS ($p < 0.05$). PSS patients were associated with poor functional outcome (mRS 5-6) at discharge, 3 months, 1 year follow-up ($p < 0.001$) and associated with mortality at 3 months follow-up ($p = 0.008$).

Conclusion: Acute ischemic stroke patients with PSS were associated with poor functional outcome at discharge, 3 months, 1 year follow-up and associated with 3-month mortality as well. Cardiac emboli and progressive stroke were statistically significant predictive factors for PSS.

Neurofilament Light Could Be a Predictor of Clinical Outcome and Hemorrhagic Transformation in Moderate to Severe Ischemic Stroke

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Abstract

Introduction: Ischemic stroke is a leading cause of morbidity and mortality worldwide. One possible predictor is the use of biomarker especially neurofilament light chain (NFL).

Objective: To explore whether NFL could predict clinical outcome and hemorrhagic transformation in moderate to severe stroke.

Patients and Methods: Fifty-one moderate to severe ischemic stroke patients were recruited in this cohort study. Blood NFL was obtained from patients at admission (day 1) and 24-96 hours later (day 3). NFL was analyzed with the ultrasensitive single molecule array (Simoa). Later, we calculated incremental rate NFL (IRN) by changes in NFL per day from baseline. We evaluated National Institute of Health stroke scale (NIHSS), modified Rankins score (mRs), and the presence of hemorrhagic transformation (HT).

Results: IRN was found to be higher in patients with unfavorable outcome (7.12 vs 24.07, $p=0.04$) as well as day 3 (49.06 vs 71.41, $p=0.011$). While NFL day 1 was not significant. IRN had a great correlation with mRS ($r=0.552$, $p<0.001$). Univariate logistic regression model show OR of IRN and day 3 to be 1.081 (95%CI 1.016-1.149, $p=0.013$) and 1.019 (1.002-1.037, $p=0.03$), respectively. Multivariate logistic regression has shown to be significant. In receiver operating analysis, IRN, day 3, combined IRN, with NIHSS and combined day 3 with NIHSS shows AUC (0.744, $p=0.004$; 0.713, $p=0.01$; 0.805, $p<0.001$; 0.803, $p<0.001$, respectively) For HT, day 1 and day 3 have correlation with HT ($H=4.544$, $p=0.033$; $H=6.185$, $p=0.013$, respectively).

Conclusion: NFL was found to correlate and predict clinical outcome. In addition, it was found to correlate with HT.

The Utility of Neurofilament Light Chain in Aetiologic Differentiation of Disorders of Consciousness

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Abstract

Objective: Neurofilament has become a promising biomarker for neuro-axonal injury; however, its diagnostic utility is limited to chronic disorders. This study evaluated the value of neurofilament light chain (NfL) in differentiating patients presenting with alteration of consciousness (AOC).

Materials and Methods: Patients who presented with AOC and underwent lumbar puncture at King Chulalongkorn Memorial Hospital, Bangkok, Thailand, were enrolled. All initial clinical data were assessed by a neurologist to give a provisional diagnosis. Plasma and cerebrospinal fluid (CSF) levels of NfL were measured. Participants subsequently received advanced investigations and follow-up to conclude the final diagnosis. The diagnoses were classified into a structural or metabolic cause. The performance of NfL to distinguish structural from a metabolic cause for the final diagnosis was assessed. Additionally, CSF NfL and other clinical parameters served as the independent variables for logistic regression models to predict the final diagnosis. The performance of CSF NfL, neurologist's provisional diagnosis and each model were compared.

Results: Among 71 participants enrolled, the median (IQR) age was 57 (47) years and 37 (52.1%) were female. The final diagnosis of 48 (67.6%) and 23 (32.4%) participants was due to structural and metabolic cause, respectively. CSF NfL concentrations were significantly higher in the structural group (p -value 0.001). CSF NfL alone demonstrated an AUC of 0.75 (95% CI 0.63–0.88). Multivariable regression model using CSF NfL, days after onset, abnormal neurological examination, abnormal CSF profile and abnormal neuroimaging predicted structural diagnosis with an AUC of 0.90 (95% CI 0.83–0.98), which was not significantly higher than a neurologist's provisional diagnosis 0.85 (95% CI 0.75–0.94) (p -value 0.39). Incorporating the provisional diagnosis in the model resulted in the highest AUC of 0.95 (95% CI 0.90–0.99).

Conclusion: NfL distinguished structural from metabolic causes of AOC with moderate accuracy. Nevertheless, including other clinical data to construct a model improved the performance to a level that was comparable to clinical neurologists. Importantly, using the model with a neurologist provides the greatest diagnostic accuracy.

Prevalence and Predictive Score of Moderate to Severe Obstructive Sleep Apnea in Acute Ischemic Stroke Patients Using Pulse Oximetry.

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Abstract

Objective: Obstructive sleep apnea (OSA) is linked with ischemic stroke (IS) and transient ischemic attack (TIA), but it remains underdiagnosed because of the inaccessibility of polysomnography. Our objectives were to determine the prevalence and to generate the predictive score for the diagnosis of moderate-to-severe OSA among patients with IS and TIA.

Materials and Methods: Patients who were diagnosed with IS or TIA, aged >18 years, were consecutively enrolled between April and November 2021 into this cross-sectional study conducted at the Stroke Unit, the King Chulalongkorn Memorial Hospital. Oxygen saturation index (ODI) was assessed using the NONIN PureSAT Model 3150 (WristOx2 3150). The Berlin's questionnaire, STOP-Bang questionnaire, and Epworth Sleepiness Scale (ESS) were evaluated. Patients were categorized into two groups: ODI of ≤ 15 (no OSA or had mild OSA) and >15 (moderate-to-severe OSA)

Results: Among 83 patients enrolled, 51 (61.4 %) were male, median (IQR) age was 65 (25-99) years, and body mass index (BMI) was 23.8 (14.8-38.7) kg/m^2 , and 60 (72.2%) had OSA. Patients who had ODI >15 were significantly more likely to have higher BMI (median 22.8 vs 24.9, $p=0.08$) and neck circumference (36 vs 38, $p=0.08$) than those who had ODI ≤ 15 . Using the logistic regression model, BMI, neck circumference, ESS, STOPBANG, BERLIN CAT 3, and having dyslipidemia were selected as the final variables to generate the predictive score. The model showed area under the receiver operating characteristic curve (AUCROC) of 0.825 (95%CI 0.736-0.913) and sensitivity, specificity, positive predictive value, negative predictive value, and accuracy of 93.1%, 55.6%, 52.9%, 93.8%, and 68.7% using the cut-off point of >2 , respectively.

Conclusions: We found a high prevalence of moderate-to-severe OSA among IS and TIA patients. Using the selected six variables, the score showed very good performance in diagnosis of moderate-to-severe OSA.

Diagnostic Accuracy of Cerebral Peduncle and Middle Cerebellar Peduncle Widths in Differentiating Atypical Parkinsonian Syndromes from Parkinson's Disease

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Abstract

Introduction: The differentiation of Parkinson's disease (PD) and atypical parkinsonian syndromes (APS) is clinically challenging, especially in the early stage of the disease. Magnetic resonance imaging (MRI) may improve diagnostic accuracy. In parkinsonian syndromes, the measurement of cerebral peduncle (CP) and middle cerebellar peduncle (MCP) axial widths have not been investigated.

Objectives: To evaluate the diagnostic performance of the CP and MCP axial widths in differentiating APS from PD.

Materials and Methods: Measurements of the CP and MCP based on axial T1-weighted MRI were performed in patients with probable PD (n= 27), Lewy body dementia (LBD, n=12), progressive supranuclear palsy (PSP, n=15), multiple system atrophy (MSA, n=9), and in controls (n=10). Diagnostic accuracies were determined by sensitivity, specificity, receiver operating characteristic curve, and area under the curve (AUC).

Results: Parkinsonian patients significantly had smaller mean axial width of CP (12.81 ± 1.26 vs 13.99 ± 0.75 mm, $p < 0.01$) and MCP (16.13 ± 2.01 vs 17.94 ± 1.21 mm, $p < 0.01$) than controls. The mean MCP measurement of < 16.49 mm accurately differentiated APS from non-demented PD (sensitivity 79.2%, specificity 81.5%, AUC 0.84, $p < 0.01$). The CP to MCP ratio > 0.88 suggested the diagnosis of probable MSA (sensitivity 88.9%, specificity 90.6%, AUC 0.92, $p < 0.01$). The interrater reliability of the axial CP and MCP widths was 0.96 (interrater ICC range = 0.92–0.98). In parkinsonian patients, the width of CP showed an inverse correlation with age, while the width of MCP showed an inverse correlation with disease severity.

Conclusions: This study provides a new reliable and validated MRI measurement for differentiation of APS from PD. Measurement of CP and MCP width on the axial MRI may help distinguish patients with degenerative parkinsonism.

Incidence and Clinical Characteristics of Adverse Neurological Events and Stroke-Like Syndrome Associated with Immune Stress-Related Response after COVID-19 Vaccination

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Abstract

Introduction: Adverse events following immunizations (AEFIs) may affect the vaccine roll-out campaign to prevent the coronavirus 2019 outbreak. The term immunization stress-related response (ISRR), which is an AEFI category related to “anxiety about immunization”, is a unique syndrome with some similarity to the symptoms of stroke. This syndrome has generated fear, anxiety and increased the rate of vaccine hesitancy for most people.

Objectives: To describe the incidence and clinical characteristics of neurological adverse reactions and stroke-like syndrome related to the stress of getting vaccinated against COVID-19. Characteristics of neurological AEFIs were compared to patients with minor acute ischemic stroke (NIHSS <6) during the same period of the study.

Materials and Methods: During 1st March 2021 to 30th September 2021, we retrospectively collected data of participants aged ≥ 18 years old who received COVID-19 vaccine and developed AEFIs. For overall AEFI description, data from voluntarily reported to Thammasat university hospital (TUH) via electronic forms were reported. Data of patients with AEFI and patients with minor stroke who presented to TUH were retrieved from the hospital electronic medical record system.

Results: A total of 245,799 doses of COVID-19 vaccine were administered at TUH vaccination center during the study period. All grade and type of AEFIs were reported in 129,652 instances (52.6%). ChAdOx-1 nCoV-19 viral vector vaccine has the most frequent occurrence of AEFIs (58.0% of vaccine dose delivered), and neurological AEFIs (12.6%). Of 119 patients who had neurological AEFIs and presented to TUH, 57 patients (47.9%) had only neurological AEFIs, while the rest had neurological and other AEFIs. The most common complaints were numbness (38.7%), headache (31.1%), and dizziness (28.6%). The causative vaccines for patients who presented to TUH with neurological AEFIs were: inactivated vaccine 26 patients (21.9%), adenoviral vector vaccine 91 (76.4%) and mRNA vaccine 2 patients (1.7%). ISRR was diagnosed in 107 patients (89.9%) and there was no significant difference of neurological symptoms in all vaccines in ISRR patients. All patients with ISRR who has follow-up data (33 patients, 30.8%) showed clinical improvement. Of the remaining non-ISRR patients, 6 patients (5.0%) were diagnosed with ischemic stroke or transient ischemic attack, 3 patients (2.5%) with other neurological diagnosis, included Guillain-Barre' syndrome, first episode seizure and Bell's palsy and 3 other patients with non-neurological diagnoses. In comparison with minor ischemic stroke (116 patients), ISRR patients had significantly less ataxia ($P < 0.001$), facial weakness ($P < 0.001$), weakness of arm/leg ($P < 0.001$) and speech disturbances ($P < 0.001$).

Conclusion: The incidence of neurological AEFIs after COVID-19 vaccination was much higher among recipients of ChAdOx-1 nCoV-19 vaccine than with inactivated and mRNA vaccines. However, most neurological AEFIs were ISRR, had mild to moderate severity and resolved within 30 days. Stroke-like symptoms (BEFAST) occurred significantly less than patients with minor ischemic stroke.

Platelet-to-Neutrophil Ratio after Intravenous Thrombolysis is Prognostic Marker for 90-days Outcome in Acute Ischemic Stroke

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Abstract

Introduction: Platelet-to-neutrophil ratio (PNR) is a new biomarker that combines platelets and neutrophil counts. A recent study suggested that the level of PNR on admission is associated with the prognosis of acute ischemic stroke (AIS) patients.

Objective: To investigate PNR value as a prognostic marker for 90-days outcomes in AIS patients after intravenous thrombolysis.

Material and Method: Data on AIS patients who received intravenous thrombolysis treatment from January 2018 to June 2021 were collected at Thammasat University Hospital. Clinical outcome indicators included early neurological deterioration (END), hemorrhagic transformation (HT), delayed neurological deterioration (DND), and poor 3-month outcome (3m-mRS ≥ 3).

Results: A total 434 patients were analyzed in this study. The age was 64.5 (53-72) years, and 249 (59.6%) were male. PNR level was identified as high (at the cut-off value or above) or low (below the cut-off value) according to receiver operating curve (ROC) analyses on each endpoint. Comparison of hemorrhagic transformation (HT), delayed neurological deterioration (DND), and poor 3-month outcome (3m-mRS ≥ 3) between patients at high and low levels for platelet-to-neutrophil ratio (PNR) showed statistical differences ($p < 0.05$).

Conclusion: PNR was independently associated with poor 3-month outcome (mRS ≥ 3), hemorrhagic transformation and delay neurological deterioration. Lower PNR can predict a worse outcome.

The Impact of Covid-19 on Physical and Mental Health of Patients with Drug-Resistant Focal Epilepsy

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Abstract

Introduction: Epilepsy is a high prevalent neurological disorder that affects people of all ages and lives all around the world. Patients are 2-3 times more likely than those without epilepsy to have mental disorders, including anxiety and sadness. The coronavirus disease in 2019 (COVID-19) pandemic has been affecting people's physical and mental health throughout the world.

Objective: The objectives of the study were to assess anxiety, sadness, quality of life, and seizure frequency among drug resistant epilepsy in Thailand during the third wave of COVID-19.

Material and Method: At visit-1 (baseline) and visit-2 (1-month follow-up), we asked patients with DRE who visited our Neurology Clinic Phramongkutklao Hospital to complete questionnaires to assess anxiety (Hamilton Anxiety Rating Scale; HAM-A), depression (Patient Health Questionnaire-9 Thai version; PHQ-9T), and quality of life (Patient Weighted Quality of Life in Epilepsy-10; QOLIE-10). In addition, a seizure diary was collected in order to determine seizure frequency.

Results: From July to September 2021, ten individuals with DRE (six males, average age 36.8 years) took part in the study and performed evaluations twice, one month apart. The median monthly seizure frequency was decreased from 3 to 1 after a one-month survey, $p=0.072$. The HAM-A average and range were increased slightly from 12.0 to 13.6, with a p -value of 0.135. PHQ-9 averages were 6.40 and 6.80, respectively, with a p -value of 0.791. The QOLIE-10T score was lowered from 39.8 to 38.7, with a p -value of 0.800

Conclusion: The third wave of COVID-19 in Thailand had no effect on the physical or emotional wellbeing of individuals with drug-resistant focal epilepsy.

C2HEST Score in Prediction of Incident Atrial Fibrillation in Thai Poststroke Patients and Development of New Score among Thai Poststroke Population

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Abstract

Introduction: The C2HEST score was developed for predicting incident atrial fibrillation (AF) in Asian population using only clinical characteristic data. However, its clinical use in poststroke patients was limited.

Objectives: We aimed to evaluate the performance of C2HEST score in prediction of poststroke AF.

Materials and Methods: A retrospective cohort clinical study was conducted at Phramongkutklao Hospital between January 2016 and December 2017. Consecutive ischemic stroke patients without previous AF were included. C2HEST score was applied to each patient. The incident atrial fibrillation was documented via reviewed the medical records. Multivariate analysis and ROC curve were analyzed and use significant parameters to developed new C2HEST score for prediction of poststroke AF in the same population.

Results: Total of 561 patients, 64 patients (11.4%) developed AF. AUROC (area under the ROC curve) for C2HEST score was 0.581 (95% confidence interval 0.500-0.662; p-value 0.035). From multivariate logistic regression analysis, statically significant risk factors associated with incident AF were age \geq 70 years, male, aphasia, valvular heart disease, cortical lesion, lesion in parietal area and the number of lesions (\geq 2 lesions). C2HEST-I2 was developed from imaging findings with new ROC curve of 0.710 (95%CI 0.631-0.790).

Conclusion: The utilization of original C2HEST score in poststroke patients was modest in prediction of incident poststroke AF. The C2HEST-I2 score provided a better prediction.

A Randomized Controlled Trial Comparing the Efficacy and Safety of Pyridostigmine versus Midodrine for the Treatment of Orthostatic Hypotension in Parkinson's Disease Patients

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Abstract

Introduction: In Parkinson's disease (PD), orthostatic hypotension (OH) is a prevalent occurrence. pyridostigmine and midodrine haven't been thoroughly investigated as treatments for these people yet.

Objectives: To assess the long-term efficacy and safety of pyridostigmine and midodrine in the treatment of OH in PD.

Materials and Methods: Between July 2021 and December 2021, a randomized, open-label clinical research was undertaken. Thirteen PD patients with OH were randomly assigned to take either pyridostigmine or midodrine for one month. The primary outcome was a reduction in OH, with secondary outcomes included changes in orthostatic heart rate (HR), supine blood pressure (BP), and supine HR, as well as the percentage of patients fulfilling BP criteria for OH.

Results: At one month after treatment, both groups' orthostatic BP had improved. Orthostatic systolic BP (SBP) drop was significantly reduced in pyridostigmine group ($p < 0.001$) with significant degree compared to midodrine group (-6.43 mmHg, -19 mmHg, $p = 0.022$). In both groups, there was no significant difference in orthostatic HR change, supine SBP change, or supine HR change. Two patients reported mild adverse effects. None of the pyridostigmine patients fulfilled the BP criterion for OH, whereas 33.3 percent of the midodrine patients did.

Conclusion: Pyridostigmine and midodrine were found to be safe in OH patients with PD and reduced OH following treatment. Pyridostigmine was found to be superior than midodrine in terms of improving orthostatic SBP change and lowering the number of patients who met the BP criterion for OH.

Apixaban Concentration According to Creatinine Clearance in Non-Valvular Atrial Fibrillation Patients

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Abstract

Introduction: Apixaban is effective and safe for preventing stroke, and its usage has exponentially increased in recent years. Dose adjustment is based on creatinine level, regardless of creatinine clearance (CrCl). In addition, data concerning therapeutic range of apixaban is limited.

Objectives: The study aimed to determine plasma concentration of apixaban (C_{peak} and C_{trough}) in patients with both standard-dose and reduced-dose in association with creatinine clearance (CrCl \geq 50 ml/min, CrCl <50 ml/min).

Materials and Methods: A prospective observational study was conducted at Phramongkutklao hospital during July 2021 to January 2022. Patients with non-valvular atrial fibrillation (NVAf) who received apixaban were enrolled. Plasma concentrations (C_{peak} and C_{trough}) of apixaban were tested in individuals who on either standard-dose and reduced-dose. Furthermore, we evaluated apixaban concentration according to CrCl (CrCl \geq 50 ml/min and CrCl <50 ml/min).

Results: Total of 34 eligible patients were enrolled. Twenty patients received standard-dose apixaban and 14 patients received reduced-dose apixaban. Median C_{peak} and C_{trough} in standard-dose group with CrCl \geq 50 ml/min were 196 and 129 ng/mL, and levels with CrCl <50 ml/min were 349 and 190 ng/mL. Whereas peak and through levels in reduced-dose group with CrCl \geq 50 ml/min were 257 and 104 ng/mL, and with CrCl <50 ml/min were 190 and 108 ng/mL respectively. Therapeutic range of 41-321 ng/ml is recommended as the standard level.

Conclusion: There was no significant difference between trough and peak concentration of apixaban according to creatinine clearance.

Factors for Distinguishing between Infectious and Non-Infectious Cause in Patients with Acute Ischemic Stroke

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Abstract

Introduction: Stroke is one of the most important public health problems and the most common leading cause of death and mortality rate is almost doubled when compared to diabetes and coronary artery disease. Fever in acute stroke can contribute to a higher mortality rate and poor functional outcome.

Objectives: To identify factors that help differentiate between infectious and non-infectious causes in acute ischemic stroke (AIS) patients who develop a fever and conduct a predictive model score.

Materials and Methods: The study enrolled AIS patients aged 18 or older who had a fever within 72 hours after onset between November 2019 and November 2021. The data were prospective and retrospectively collected from medical records. The patients were categorized as infection and non-infection groups based on microbiology reports. Univariable and multivariable logistic regression analyses were used to evaluate. The predictive model was determined and developed the score using regression coefficients. The prediction power was validated using area under the receiver operating characteristic curve analysis.

Results: One hundred and fifty-six patients were enrolled. Fifty-five patients had infection, mostly (28/55) were urinary tract infection. According to multivariable logistic regression analysis, there were five independent variables associated with infection following AIS including, age (adjusted Odds ratio (AOR), 1.01; 95% confidence interval (CI), 0.98-1.05; P=0.47), body mass index (BMI) (1.06; 0.96-1.17; P=0.24), diabetes (2.05; 0.79-5.31; P=0.14), dyslipidemia (2.68; 1.08-6.68; P=0.03), and %PMN (1.01; 0.98-1.04; P=0.41). The predictive model established from the findings demonstrated moderate discrimination power (AuROC 0.6802; 95% CI 0.57 to 0.79).

Conclusion: According to the present study's findings, age, BMI, diabetes, dyslipidemia and %PMN are all related to a higher risk of experiencing infection after AIS. The clinical correlation remains the mainstay approach and these findings will enlighten a physician to decide for enhancing outcomes in AIS patients.

Association between Endothelial Derived Microparticles CD31/CD62E and Severity of Intracranial Atherosclerotic Stenosis

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Abstract

Objective: No blood biomarkers for intracranial stenosis has been established. The study aims to test the hypothesis of association between specific endothelial microparticles (EMPs) and the extent of symptomatic intracranial stenosis in patients with chronic cerebral infarction.

Methods: Thirteen adult patients (≥ 18 years of age) with symptomatic intracranial atherosclerosis attending our neurologic clinic, who met the eligibility criteria were enrolled onto the study. The eligible patients were ischemic stroke or transient ischemic attack patients aged 18 years or older with symptomatic intracranial atherosclerosis more than 3 months from stroke onset. EMPs measured using flow cytometry at time of enrollment. The extent of vascular stenosis was assessed by 3-Tesla MRI with time-of-flight sequence. The primary outcome was the association between endothelial microparticles CD31/CD62E and the degree of intracranial stenosis.

Results: A total of 13 patients with symptomatic intracranial atherosclerosis (age 63.6 ± 9.9 years, 69.2% male) were included. Mean NIHSS was 3.77 and Mean CCI score was 3.23. No significant difference of mean Annexin V+/ CD 62E+ between patients with stenosis $\geq 50\%$ and $< 50\%$ (252.79 vs. 247.63 counts/ μL , $p=0.959$). No significant difference of mean Annexin V+/ CD31+ between patients with stenosis $\geq 50\%$ and $< 50\%$ (450.94 vs. 126.07 counts/ μL , $p=0.379$). There was also no significant difference of mean Annexin V+/CD 62E +/ CD 31+ between patients with stenosis $\geq 50\%$ and $< 50\%$ (236.37 vs. 117.06 counts/ μL , $p=0.248$).

Conclusion: In conclusion, this study showed that circulating microparticle levels including Annexin V+/ CD 62E+, Annexin V+/ CD31+, and Annexin V+/CD 62E +/ CD 31+ levels were not associated with the extent of intracranial stenosis in chronic phase of stroke patients. Further studies confirming our findings are needed.

Concurrent Validity and Minimal Clinically Important Difference (MCID) of the Smile Migraine Impact Score (SMIs) using the Smile Migraine Mobile Application

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Abstract

Introduction: We created newly migraine assessment score named Smile Migraine Impact Score (SMIs), which was the score that based on frequency and severity of each headache. The SMIs was made for monitor the severity and impact of headache (that reflect the migraine status) to the patients and clinician to guide clinical judgement.

Objectives: To evaluate the concurrent validity and the minimal clinically important difference (MCID) of the Smile Migraine Impact Score (SMIs) in migraine patients.

Materials and Methods: Patients with migraine from Maharaj Nakorn Chiang Mai Hospital were prospectively recruited. Patients were instructed to record the frequency and severity of their headache symptoms for 60 consecutive days using the Smile Migraine application. The SMIs, HIT-6 score, and EQ-5D-5L questionnaires were assessed on 30th and 60th day of follow up. The concurrent validity of the SMIs with HIT-6 and EQ-5D-5L were evaluated using Spearman's correlation. MCID of the SMIs was determined via three methods: consensus-based, distribution-based, and anchor-based.

Results: A total of 50 patients were included. The majority of the participants was female (80 %) with the mean age of 36.6±10.7 years old. Prior migraine days were in the range between 5 to 10 days/month. The SMIs were significantly correlated with HIT-6 score (Spearman's ρ 0.89 [p <0.001] at 1st visit and 0.84 [p <0.001] at 2nd visit) and EQ-5D-5L (Spearman's ρ -0.83 [p <0.001] at 1st visit and -0.82 [p <0.001] at 2nd visit). All three methods to determine the MCID of SMIs yielded the same value at -1.

Conclusion: Based on our results, the SMIs showed concurrent validity with the HIT-6 score, and the EQ-5D-5L score.

Association among hs-CRP, Depressive Disorder, Quality of Life, and Neuropsychiatric Disorders in Patients with Covid-19 Infection

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Abstract

Background: Due to the pandemic situation of coronavirus throughout the world, especially in the population with chronic diseases and elderly patients. There is more chance to cause complications in these population. There are studies on impact from the spread of covid-19 in multiple aspects especially neuropsychiatric disorders.

Objective: To evaluate association among hs-CRP, depressive disorder, quality of life, and neuropsychiatric disorders in patients with Covid-19 infection.

Methods: This epidemiologic research was conducted base on a prospective study of 80 Covid-19 infection patients from June 2020 to October 2020 presented in Rajavithi internal medicine unit. With demographic datas of age, sex, underlying disease, hsCRP level, Patient Health Questionnaire-9, and General HRQoL Questionnaire were collected manually.

Results: In total, 45 females and 35 males diagnosed with Covid-19 infection, ranging in age from 18 to 88 years (mean is 58.6 years), were eligible in the study from June 2020 – October 2020. After treatment of COVID-19 infection, the mean \pm standard deviation of hs-CRP level significantly decreased from 8.54 ± 7.67 at first week to, at maximum reduction, 0.57 ± 1.03 at second week ($P < 0.0001$), the mean \pm standard deviation of SF-36 significantly increased from 54.64 ± 13.98 at first week to, at maximum, 70.86 ± 9.87 at second week. ($P < 0.0001$). The Pearson Correlation between hs-CRP and SF-36 (Bodily pain $R = 0.31$, $P = 0.004$), (Role limitations due to emotional problems $R = 0.21$, $P = 0.006$) was significant correlation.

Conclusion: This study show two correlations: The first correlation is between inflammatory process (hs-CRP) and depressive disorder. The second is between inflammatory process (hs-CRP) and QoL (bodily and role limitations due to emotional problems domain). However, there were other multiple factors such as hypoxia and systemic diseases which causing the problems as above. We believe that acute neuropsychiatric symptoms correlated with elevated inflammatory cytokine in the central nervous system and may have been associated with poor prognosis of Covid-19.

Mortality Rate within 30 Days of the Patients Present with Malignant Middle Cerebral Occlusion in Stroke Unit, Rajavithi Hospital

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Abstract

Introduction: Malignant middle cerebral artery occlusion was high mortality rate in previous study and had longer hospital stay than non-middle cerebral artery occlusion.¹ However they did not clarify the risk factor of those malignant middle cerebral artery occlusion and other patients status outcome after they had malignant middle cerebral artery occlusion

Object: To study mortality rate, characteristics, other morbidity cause and modified ranking score (mRS) at 30 days after patients had malignant middle cerebral artery occlusion in stroke unit, Rajavithi Hospital.

Method: Retrospective cross sectional study of all acute ischemic stroke patients admitted in stroke unit, Rajavithi hospital from 1 July 2019 to 31 December 2021. Reviewing the medical record database of acute ischemic stroke patients who had middle cerebral artery occlusion. The diagnosis of middle cerebral artery occlusion was made by cerebrovascular specialist. The patients who had malignant middle cerebral artery more than 48 hours after onset of symptom and who were less than 18 years old would be excluded.

Result: From all 1100 ischemic stroke patients, 158 patients with malignant middle cerebral artery occlusion were included in this study. 20 patients were death within 30 days. Mortality rate is 12.7 %. Risks for poor prognosis outcome are statistic significantly for patients who died within 30 days were NIHSS score (16.5 vs 13.48, P 0.04), onset time (359 min vs 671.9 min, P 0.002), congestive heart failure (45% vs 15.2%, P 0.04), midline shift (50% vs 8.7%, P < 0.01) and hemorrhagic transformation (65% vs 26.4%, P < 0.01). The patients who died within 30 days average of hospital stay were 9.9 days. Survive patients had higher hospital stay (22.2 days vs 9.9 days, P < 0.01)

Conclusion: Malignant middle cerebral artery occlusion patients in stroke unit, Rajavithi Hospital had higher mortality rate at 30 days, higher mRS score at 30 days and longer hospital stay than those of general ischemic stroke patients.

Associations between Time to Administration of Antiseizure Medications and Short-term Clinical Outcomes in Adult with Convulsive Status Epilepticus

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Abstract

Introduction: Status epilepticus (SE) is a time-sensitive emergency that requires immediate treatment.

Objective: To analyze the associations between time to administration of antiseizure medications (ASM) and short-term clinical outcomes.

Material and Methods: From January 1, 2014 to December 31, 2020, we performed a retrospective cohort study in adult patients who presented with convulsive SE. Primary outcome was to analyze association between timing of ASM administration and mortality. Secondary outcomes were to determine the relationship between timing of ASM administration and length of hospital stay, and mRS at discharge, respectively.

Results: A total of 83 patients were enrolled. Mean age was 57. Mean length of hospital stay was 32 days. BDZ was prescribed as first ASM in 79 patients (95.2%). Levetiracetam was the second ASM most frequently administered (N=39, 47%), followed by phenytoin (N=28, 33.7%), and valproate (N=13, 15.7%). Of 83, 71 patients (85.5%) had prolonged t_2 period. Therapy delay in SE, and underdosing of ASM was noted in both alive and dead group. The mortality rate was 20.5%, and was highest in super-refractory SE (N=15, 88.2%). For secondary outcomes including length of hospital stay and mRS, a statistically significant finding was only noted in the category of timing of seizure onset to first ASM, with $p=0.002$, and $p=0.004$, respectively.

Conclusion: Although, this study showed no significant association between timing of ASM administration and in-hospital mortality. Prolonged duration of SE and therapy delay was associated with increased mortality. SE guidelines were not followed in a substantial proportion of SE patients.

Risk and Prognostic Factors for Severity of Visual Field Defect after Stroke

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Abstract

Introduction: Visual field defect (VFD) is a common deficit after stroke. There are limited data on visual field recovery prognostic factors.

Objectives: To define the prognostic factors associated with spontaneous improvement of VFD after stroke.

Materials and Methods: We conducted a prospective cohort study. Patients with stroke with visual field defect were included. The location of the lesions in CT or MRI, stroke severity, and vascular risk factors were collected. Multiple linear regression models were performed to determine factors associated with initial VFD severity. Linear mixed models were performed to explore factors related to VFD changes over time.

Results: Fifty-three patients were recruited in the study (mean age 61.51 years old [SD 16.23]). Lower VFI and MD in the first CTVF test were associated with the mesial temporal lobe and splenium of the corpus callosum lesions. Mesial temporal lobe atrophy was only associated with lower MD. Less VFI improvement were associated with right hemispheric involvement (p-value = 0.027, B -13.6), lesions involving the mesial temporal lobe (p-value = 0.009, B -16.39), and chronic kidney disease (p-value = 0.011, B -12.74). Less MD improvement were associated with bilateral hemispheric involvement (p value < 0.001, adj. B -12.7), lesions involving the mesial temporal lesion (p value = 0.002, adj. B -5.31), LGN (p value = 0.008, adj. B -3.47), splenium of the corpus callosum (p value = 0.016, adj. B -4.66), and high MTA score (p value < 0.001, adj. B -3.92).

Conclusions: This study provided the factors associated with poor VFD improvement after stroke which emphasized its interconnection essential for neural plasticity.

Early-Onset Dementia: Causes compared to Late-Onset Dementia

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Abstract

Introduction: The global number of dementia cases averages 50 million and is expected to triple in the next 30 years. At present, dementia is not only an elderly disease (known as late-onset dementia; LOD) but the number of people with early-onset dementia (EOD) is growing and becoming more recognized.

Objectives: To compare characteristics and causes of early-onset dementia (EOD) and late-onset dementia (LOD) and to explore predictors of EOD and LOD.

Materials and Methods: A retrospective case-control study included dementia patients with MOCA score <25 or MMSE score <22. Baseline characteristics and causes of dementia were collected. Student t-test or Mann-Whitney, and Chi-square or Fisher's exact tests were used to compare the data. Uni- and multivariate logistic regression were used to explore the predictive factors.

Results: Two hundred ninety-six patients were included (148 in each group). The percentage of treatable causes in EOD was significantly higher than LOD (14.86% & 6.8%, respectively). Regarding non-treatable causes, mixed dementia was significantly lower in EOD (9.46%) than LOD (26.35%). There was a significant difference in presenting symptoms between EOD and LOD. Most of the LOD patients presented with memory problem (96%) while 18% of EOD patients presented with non-memory domain. Baseline characteristics showed that male gender, smoking, alcohol drinking, bachelor's degree or higher, family history of dementia was significantly higher in EOD compared with LOD. On the other hand, EOD group had significantly lower rate of hypertension (HT), dyslipidemia, diabetes and chronic kidney disease (CKD) than LOD group. However, in multivariate analysis, only smoking, family history, HT and CKD remained significantly factors predicting the onset of dementia.

Conclusion: Treatable causes of dementia was not uncommon and should be considered especially in EOD. Controlling risk factors (smoking, HT and CKD) may delay the development of both EOD and LOD.

Vascular Risk Factors for Vascular Dementia Compared with Alzheimer's Disease

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Abstract

Introduction: Evidence of an association between vascular risk factors and vascular dementia (VaD) and those of Alzheimer's disease (AD) are still inconsistent. Dyslipidemia was one of the most conflicting factors and not previously included as a risk factor for any dementia in the Lancet model.

Objectives: This study aims to assess vascular risk factors including hypertension, dyslipidemia, diabetes, and smoking in patients with VaD compared to AD.

Materials and Methods: The design was a retrospective cross-sectional analysis on patients who were diagnosed with AD and VaD at Ramathibodi Hospital from January 2011 to December 2021. Multivariate analysis with multi-level mixed-effects logistic regression was used to determine independent vascular risk factors associated with the type of dementia.

Results: A total of 220 patients consisting of 110 patients with AD and 110 patients with VaD met the inclusion criteria. Hypertension and dyslipidemia were significantly higher in VaD compared to AD (OR = 3.2 [95%CI 1.5-6.9]; P value 0.002, and (OR 2.4 [95% CI 1.2 - 4.8]; P value 0.012, respectively). However, smoking and diabetes tended to have more association with VaD than AD but no statistical significant.

Conclusion: Hypertension and dyslipidemia were significant risk factors associated with VaD compared with AD. In the present that there is no curative treatment available for patients with dementia, dementia prevention is essential. This study found the importance of dyslipidemia that should not be overlooked. Controlling lipid level and hypertension may lower the risk of dementia especially VaD.

Prognostic Factor for Visual Recovery in Severe Optic Neuritis

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Abstract

Introduction: Optic neuritis is an inflammatory disorder of the optic nerve. In clinical practice, treating patients with severe optic neuritis is a great challenge for clinicians. After a five-day course of intravenous methylprednisolone administration, VA does not improve on many occasions. Plasma exchange is then pursued with mixed results. Therefore, it is well worth investigating factors that can influence the visual outcome in severe cases.

Objectives: This study aimed to investigate the role of prognostic factors on visual recovery in severe optic neuritis.

Materials and Methods: We conducted a single-center, retrospective study of patients admitted to the neuro-ophthalmology unit at Ramathibodi Hospital from January 2010 to September 2020. Inclusion criteria were age > 16 years old, acute isolated optic neuritis, and severe visual loss (best corrected initial visual acuity was worse than 20/200) were included.

Results: There were 111 patients (136 affected eyes) with severe optic neuritis. The mean age was 44.74 ± 17.76 years old. Of 111 patients, 77.48% were female. Mean follow-up VA at 6 months was 0.7 ± 0.99 logMAR. Multiple linear regression analysis was performed using sex, bilateral involvement, and plasma exchange to predict follow-up VA at 6 months. Only sex was significantly correlated with the follow-up VA (p -value = 0.044) in that the male gender was associated with good visual outcomes. A subgroup analysis revealed no significant difference in follow-up VA between the plasma and non-plasma exchange groups. However, there was a large gap in sample size between the plasma and non-plasma exchange groups.

Conclusion: Our results demonstrated that sex was correlated with VA at a 6-month follow-up. The male gender tended to have a protective effect on visual recovery. A further cohort study with larger sample size is required to clarify the effect of plasma exchange in severe optic neuritis.

Siriraj Status Epilepticus Outcome-Prediction Score: A Retrospective study

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Abstract

Introduction: Status epilepticus (SE) is a neurological emergency with high mortality. Predictive models for evaluating mortality of SE such as Status Epilepticus Severity Score (STESS) were developed according to the western world. There was only one developed predictive model based on Thai population.

Objectives: The primary objective is to identify the predictive factors of mortality of SE and to develop a predictive model to predict mortality in patients with SE by using SE patients' data from Siriraj Hospital between the years 2007-2017.

Materials and Methods: The study design was a retrospective study. We included all patients who were older than 18 years old and had been diagnosed and ICD-10 encoded as SE from 2007 to 2017. Logistic regression analysis was performed and the significant variables were reported as adjusted OR and 95% confidence interval (CI). The predictive model for SE mortality was created by using the coefficients from the significant factors.

Results: The predictive model in the form of Score = $(-1) + (2 * \text{age} > 65) + (2 * \text{thrombocytopenia}) + (1 * \text{convulsion time} > 30 \text{ minutes}) + (4 * \text{cardiac arrest}) + ((-3) * \text{inadequate AEDs}) + (2 * \text{septicemia}) + ((-2) * \text{performing EEG})$. The cutoff score of 0 was related to mortality with sensitivity of 85.8% and specificity of 61.4%. The area under the ROC curve in the model was 0.809.

Conclusion: 7 independent determinants which were age, thrombocytopenia, convulsion time, postcardiac arrest, inadequate AEDs, septicemia, and performing EEG, were used for development of predictive score in patients with SE. Further research is needed in the future validation of the risk score.

Prevalence of Abnormal EEG in Autoimmune Encephalitis and CJD in Patients, Who Presented with Cognitive and Psychobehavioral Symptoms Compared to the Prevalence of Abnormal EEG in Other Etiologies at Siriraj Hospital

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Abstract

Introduction: Electroencephalography (EEG) is a noninvasive and inexpensive investigation for the diagnosis and follow-up of neurological disorders. Cognitive and psychobehavioral symptoms are the presenting clinical manifestation in various neurological disorders including Creutzfeldt-Jakob disease (CJD) and autoimmune encephalitis. Both diagnoses often have characteristic abnormal EEG patterns, and abnormal EEG patterns may be beneficial for early diagnosis of these conditions.

Objective: To evaluate the prevalence of abnormal EEG and specific EEG findings in patients with CJD and autoimmune encephalitis, who presented with cognitive and psychobehavioral symptoms.

Methods: We retrospectively reviewed our EEG database and patients' medical record for patients (age ≥ 18 years) with cognitive and psychobehavioral symptoms, who have at least one EEG record from January 2018 to December 2020 and have no previous history of seizure or epilepsy. Patients' characteristics, clinical presentation, EEG patterns, and results of other investigations were recorded.

Results: 289 patients (mean age 57.5 ± 19.3 years old) were included. The prevalence of abnormal 1st EEG ranged from 100% in CJD, 72.2% in autoimmune encephalitis (58.3 in definite autoimmune encephalitis and 100% in possible autoimmune encephalitis), and 35.2% in other diagnosis group. The prevalence of 1st abnormal EEG and many specific EEG patterns was significantly higher in CJD and possible autoimmune encephalitis than in other diagnosis group.

Conclusion: In this study, CJD and possible autoimmune encephalitis had a very high prevalence of abnormal EEG compared to the other etiologies. Therefore, EEG has value in guiding clinicians to certain specific diagnoses in patients with cognitive and psychobehavioral complaints.

The Association of Blood Pressure and Outcomes After Mechanical Thrombectomy in Patients with Acute Ischemic Stroke

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Abstract

Introduction: Blood pressure control after mechanical thrombectomy is concerned to affect treatment outcomes. Although BP \leq 180/105 mmHg is recommended in previous guideline, real practice trends to keep BP below that point because some evidence showed benefit in clinical outcomes.

Objective: To investigate the association of blood pressure and outcomes after mechanical thrombectomy assessment of 3-month functional independence, NIHSS change, sICH, craniotomy, and 3-month mortality.

Materials and Methods: This study is a retrospective chart review in Siriraj Hospital, a comprehensive stroke center, Thailand. SBP and DBP were recorded during the first 24 hours after mechanical thrombectomy. Patients were categorized into two groups according to mean SBP (SBP<140 and SBP \geq 140 mmHg).

Results: A total of 160 patients with acute ischemic stroke undergone mechanical thrombectomy were enrolled. One hundred and one patients in SBP<140 mmHg group and 49 patients in SBP \geq 140 mmHg group. In case-control matching analysis, showed no statistical difference in outcomes between groups. However, it trended to have higher odds of sICH in the SBP \geq 140 mmHg group (OR 4.37; p=0.357). In subgroup analyses, lower SBP group was favored in the 3-month functional independence (OR 4.28, p=0.003) for atherosclerotic stroke. Whilst cardioembolic stroke, higher SBP control trended to associated with no statistically significant in lower odds of sICH and craniotomy (sICH OR 0.72; p=0.32, craniotomy OR 0.73; p=0.56).

Conclusions: Higher blood pressure (\geq 140 mmHg) trended to associated with sICH in acute ischemic stroke patients undergone mechanical thrombectomy. Lower SBP (<140 mmHg) had higher odds of 3-month functional independence in atherosclerotic stroke.

Validation Study of Thai Late-Life Dementia Risk Score

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Abstract

Introduction: Early detection and prevention are important to modify clinical outcome of dementia. In Thailand, medical records in the past 30 years were not as good as today. It is difficult to obtain medical data during midlife of the elders.

Objectives: To test and validate Thai late-life dementia risk score reported earlier.

Materials and Methods: Demented and non-demented elders aged 65 years and over were recruited to this study. 262(75.7%) dementia and 84(24.3%) non-dementia with MCI or normal cognition from memory clinic and from Neuro-computerized Neurocognitive (NN) Study at NN Lab at Faculty of Medicine Siriraj Hospital were included in this study. Retrospective chart review of these individuals was done to obtain current clinical data, comorbidity and lifestyle information. Body weight, TGUG and BP were re-evaluated during the mentioned period. The late life Thai dementia risk scores are proposed by the Dementia and Disability Project in Thai Elderly (DDP). These dementia risk factors include age, years of education, current working status, memory complaint, BW, TGUG testing, and neuropsychiatric symptoms. The receiver operating characteristic curve (ROC) and chi square were utilized for this validation study.

Results: Subjects had a mean age of 77.35 ± 7.40 years with mean onset-to-diagnosis was 2.7yrs. The ROC analysis of Thai late life dementia risk score showed area under the curve of 0.768 ($p < 0.001$). The cutoff > 8.5 points was offered with its PPV 85.59% and NPV of 41.94% respectively.

Conclusion: Thai late life dementia risk scores provide excellent results in predicting dementia risk. It is practical to use and gives out good validation report.

Factors Associated with Endovascular Treatment Decision-Making in Inter-Hospital Transfer for Acute Ischemic Stroke Patients

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Abstract

Introduction: Mechanical thrombectomy could significantly improve stroke outcome, however, it could be done only in a tertiary hospital and less than half of referred patients received the procedure. As a result, knowledge of the factors associated with decision in endovascular treatment can suggest physician about escalation percentages of mechanical thrombectomy.

Objectives: To identify factors for decision undergoing mechanical thrombectomy and good outcome in acute ischemic stroke patients who were transferred to Siriraj Hospital.

Materials and Methods: Consecutively retrospective review in our database for patients with acute ischemic stroke transferred to Siriraj hospital for mechanical thrombectomy from May 2019 to July 2021 was done. We reviewed baseline characteristics, clinical data of the patient, significant factors from primary hospital and Siriraj hospital. Obtaining mechanical thrombectomy and a 90-days mRS score was recorded as an outcome. Association between factors and outcome was investigated.

Results: 248 patients, median age 68 years, initial NIHSS score 15, ASPECT score before referring 10, mean door in to door out time of primary hospital (DIDO) was 125 minutes. Mechanical thrombectomy was performed in 79 (31.9%) patients. The significant risk factors regarding the procedure were the presence of M1 MCA occlusion and higher NIHSS at Siriraj hospital. In addition, younger age and lower 24-hours NIHSS significantly affected independent status at 90 days.

Conclusion: The significant factors for undergoing mechanical thrombectomy were M1 MCA occlusion and higher NIHSS at Siriraj hospital

The Effectiveness and Safety of Mycophenolate Mofetil in Neuromyelitis Optica Spectrum Disorder

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Abstract

Introduction: Neuromyelitis optica spectrum disorder (NMOSD) is an inflammatory central nervous system demyelinating disorder. Each NMOSD relapse often leaves patients with disability. Several studies have demonstrated the efficacy of mycophenolate mofetil (MMF) for relapse prevention in NMOSD, but there is no data in the Thai population.

Objectives: To analyze the effectiveness and safety of MMF in Thai NMOSD patients.

Materials and Methods: We performed a retrospective review of NMOSD patients at Siriraj Hospital from January 1994 to December 2020. NMOSD patients taking MMF for at least 6 months were included. Pre- and post-MMF annualized relapse rate (ARR), Expanded Disability Status Scale (EDSS) scores, and visual functional system scores were compared.

Results: Fifty-eight NMOSD patients taking MMF were included. Thirty-five patients (65.5%) were relapse-free after MMF. The median ARR decreased from 0.80 (IQR 0.45-1.39) to 0 (IQR 0-0.31) ($p < 0.001$). Over 90% had either stabilized or improved EDSS. The median EDSS score decreased from 3.5 (IQR 3-6) to 3 (IQR 2-6) ($p = 0.004$). Nine patients experienced adverse events from MMF, with lymphopenia and infection observed in 8.6% and 5.1% of the cohort, respectively. Subgroup analysis of patients switching from azathioprine to MMF showed significantly reduced ARR and EDSS score.

Conclusions: MMF is effective for relapse prevention in Thai NMOSD patients, with low risk of adverse events. It could be a salvage therapy for patients who fail to respond to azathioprine. Unfortunately, MMF is not supported by the Thai Universal Health Coverage for use in NMOSD patients.

The Utilization of RACE Scale to Predict Large Arterial Occlusion in 24 Hours of Acute Ischemic Stroke Symptoms

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Abstract

Background: There's a significant increase in proportion of acute ischemic stroke patient referred for mechanical thrombectomy in suspicious of large vessel occlusion (LVO).

Method: We retrospective review of acute ischemic stroke patients within 24 hours who received computed tomography brain angiography (CTA). The NIHSS were collected as Rapid Arterial Occlusion Evaluation Scale (RACE) and compared to standard diagnosis. Sensitivity and specificity were evaluated. We analyzed the effect of RACE scale in different time of onset and situations of patients.

Results: Total of 491 patients were enrolled, AUCs of RACE score highly effective for detect large vessel occlusion 0.80 (95% CI, 0.77 to 0.84). RACE score at cut-point ≥ 5 had the sensitivity of 78.1 (95% CI, 72.4 to 83.1), specificity of 70.28 (95% CI, 64.2 to 75.9), overall accuracy 74.1%. We found that the sensitivity and specificity below 4.5 hours were 79.0% and 73.8%, ≥ 4.5 hours were 76.0% and 63.5 % and 6-12 hours were 71.4% and 58.7 %, respectively.

Conclusion: We validate the use of RACE stroke scale in predicted large arterial occlusion within 24 hours of acute ischemic stroke in prehospital setting, with good sensitivity and specificity of assessment LVO especially within 4.5 hours in Thai populations.

Early Detection of Diabetic Peripheral Neuropathy Using EMLA-Induced Skin Wrinkling

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Abstract

Introduction: Screening for early diabetic peripheral neuropathy (DN) is essential for foot ulcer prevention. Semmes-Weinstein monofilaments (SWMF) is commonly used to detect DN in Thailand. Though, interpretation of SWMF requires patient participation, which is susceptible to risk of error in patients with impaired cognitive function or uncooperative patients. The stimulated skin wrinkling (SSW), in contrast can be interpreted by trained investigators which is more appropriated.

Objectives: This research aims to investigate the functions of SSW by using eutectic mixture of local anaesthetic (SSW-EMLA) for early DN diagnostic.

Materials and Methods: This is a cross-sectional study, 102 diabetic patients (DM group), 33 diabetic patients with foot ulcer (DN group control), and 30 non-diabetic patients (non-DN group control) were recruited from the Faculty of Medicine, Vajira Hospital, Navamindradhiraj University, during the period of February 3rd, 2021 to November 30th, 2021. SSW was conducted by applying EMLA on tips of 2nd, 3rd, 4th finger of both hands. SWMF, sensory perception of pain (SPP), vibration perception threshold (VPT), joint position sense (JPS) and deep tendon reflexes (DTR) were also performed on the same day.

Results: Inter-rater agreement of two investigators of SSW-EMLA was high with intraclass correlation coefficient of 0.87 (0.824-0.904) for the right, and 0.874 (0.830-0.907) for the left hand. Kappa coefficient of agreement of SSW-EMLA, SPP, SWMF, VPT 0.714, JPS, and DTR testing was 0.411, 0.478, 0.714, 0.444, and 0.681, respectively. Sensitivity of SSW-EMLA testing for DN detection was 83.3%, and specificity was 85.7%.

Conclusion: SSW-EMLA can be considered as an alternative method for DN detection, due to its non-invasiveness, inexpensiveness, and simple procedures.

Prevalence of Small Fiber Neuropathy in Idiopathic Parkinson's Disease Patients

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Abstract

Introduction: Autonomic dysfunction is found to occur in Parkinson's disease. It can present in the form of peripheral small fiber neuropathy (SFN). Because of inaccessible standard methods, establishing a diagnosis of SFN can be challenging

Objectives: To study the prevalence of SFN in idiopathic Parkinson's disease patients in Vajira Neurological Clinic via the stimulated skin wrinkling test by the eutectic mixture of local anesthetics (SSW-EMLA) method.

Materials and Methods: Thirty-three idiopathic Parkinson's disease (PD) patients were recruited from the neurology clinic. Twenty-two non-Parkinson's patients served as the control. In order to detect SFN, EMLA cream was applied to the tip of digits 2, 3, and 4 and the degree of wrinkling graded. Symptoms were assessed by Symptom Inventory Questionnaire (SFN-SIQ) and determination of the intensity of the neuropathic pain was performed using the Neuropathic Pain Scales (NPSI), and nerve conduction studies (NCS) were performed to exclude large fiber neuropathy.

Results: The prevalence of SFN was 12/33 (36%) in all PD patients, while 24 out of 33 patients in the PD group had symptoms with SFN-SIQ ≥ 5 score. Four out of 24 who had symptoms showed abnormal NCS. Finally, 12 patients showed symptoms with normal NCS and an abnormal SSW-EMLA test among the PD patients. Meanwhile no SFN was detected in the control group. P values 0.003.

Conclusion: Our study showed the higher prevalence of SFN detected by the SSW-EMLA test in PD patients in Vajira Neurology Clinic compared with the non-PD control group.

Identifying Obstructive Sleep Apnea in Patients with Epilepsy: A Prospective Multicenter Study

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Abstract

Introduction: Patients with epilepsy trends to have OSA than general populations which can worse seizure control. Polysomnography is the gold standard to diagnose OSA. However, the sleep recordings cannot be used as routine example because of their high costs and low availability. So, OSA screening questionnaire is needed.

Objectives: The aim of the study is to compare the performances of the four commonly used OSA screening questionnaires in patients with epilepsy

Materials and Methods: 166 patients with epilepsy were recruited from secondary medical care, tertiary medical care and university hospital. Risk of obstructive sleep apnea was evaluated with STOP-BANG, STOP-BAG sleep apnea scale of the sleep disorders questionnaire (SA-SDQ) and No SAS score. Overnight polysomnography (PSG) was done to confirm diagnosis and evaluate severity of OSA

Results: Among 166 patients with epilepsy, OSA (AHI ≥ 5) was present in 38.6% % of the patients; 19.9% of patients had moderate to severe OSA (AHI ≥ 15), and 8.4% of patients had severe OSA (AHI ≥ 30). The median age was 33-year-old (IQR, 25-46) and 94 (56.6%) of the patients were men. In overall, NoSUS is the best AUC than STOP-BANG, STOP-BAG or SA-SDQ. However, there was not differ significantly on AUC between STOP-BANG, STOP-BAG and, NoSAS in cut-off AHI score ≥ 5 , ≥ 15 and ≥ 30 .

Conclusion: Our results suggest that these questionnaires can be useful for screening and stratification of patients with epilepsy in diagnosis of OSA. Overall, the diagnostic ability of No SAS is higher than STOP-BANG, STOP-BAG and SA-SDQ.

Five-year Post Thymectomy Outcome as Evaluated by Dosage Requirement of Pyridostigmine, Prednisolone and Azathioprine between Thymomatous and Non-Thymomatous Myasthenia Gravis Patients

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Abstract

Background: Post-thymectomy outcome of Thymomatous (Th) and non-thymomatous (nTh) myasthenia gravis (MG) patients evaluated by daily dosage requirement of symptomatic or immunosuppressive drug is limitedly studied.

Objective: To evaluate the five-year post thymectomy outcome by the dosage requirement of pyridostigmine, prednisolone and azathioprine between thymomatous (ThMG) and non-thymomatous myasthenia gravis (nThMG) patients.

Material and Methods: All transsternal thymectomized MG patients who had thymic histopathology results between 2002-2020 were enrolled. Clinical demographic data and presentations between ThMG and nThMG patients was analyzed by univariable analysis ($p < 0.05$). The daily dosages of pyridostigmine, prednisolone and azathioprine required during the five consecutive years after thymectomy were compared intragroup and between the two groups pre and post thymectomy ($p < 0.05$).

Results: The ThMG patients had significant higher age at diagnosis of MG (44 (41.8, 49.2) vs. 33 (21.5, 44) years, $p = 0.008$), but shorter time from diagnosis to thymectomy (8.5 (2, 12) vs. 22 (10.2, 46.5) months, $p = 0.03$). The daily dosages of the medicines required for MG symptom control during the five consecutive years after thymectomy were compared with those before thymectomy in each MG patient group (intra-group comparison). The mean (SD) daily dosage of pyridostigmine decreased significantly at the 2nd and 4th year in nThMG patients, but non-significant reduction was shown in ThMG patients. Daily requirement of prednisolone decreased significantly at the five consecutive years of follow-ups in both groups. Significantly higher dosage of azathioprine was required from the 3rd to 5th year in nThMG patients, whereas there was significantly increased dosage only at the 1st year but lower dosage from the 2nd to 3rd year presented in ThMG patients with a tendency to require much lower dosage. Between the two groups, the daily dosage requirement of each medicine showed significant smaller dosage difference of prednisolone in nThMG group than ThMG group from 2nd to 4th year with $p = 0.008$, 0.001, and 0.014 respectively. We also explored the exacerbation and crisis rates after thymectomy. The result showed no statistically significant difference in the rates of exacerbation or crisis between ThMG and nThMG groups. Almost all the post thymectomy MG patients in this study were in unfavorable outcome as most of them were classified into MM3 of MGFAIS during the five-year follow-ups

Conclusion: Thymectomy in the indicated MG patients usually yields the long-term favorable outcome. The immediate favorable outcome tends to start two years after thymectomy with the possibility to reduce the daily dosage of medicines needed for treatment of MG. ThMG patients seems to respond to thymectomy better than nThMG patients as shown by the more reduction in the daily dosages of adjunctive immunosuppressive agents required. Therefore, we considered higher level of neuro-immunologic reaction is associated with nThMG. Longer time of follow-up waiting for the expected post thymectomy outcome is suggested.

Interleukin-6 Level in Cerebrospinal Fluid and Serum of Patients with Autoimmune Encephalitis: A Prospective Study.

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Abstract

Background: Autoimmune encephalitis is an important cause of focal or diffuse brain injury by autoantibody. Patients with clinically suspected autoimmune encephalitis but negative for autoantibody testing are clinical challenging in the differential diagnosis with other causes of encephalitis. Cytokine panel especially interleukin 6 is a surrogate marker for an inflammatory pathway which may help to guide diagnosis inflammatory causes rather than other etiologies.

Objectives: To identify the relationships of serum and cerebrospinal fluid (CSF) IL-6 level with autoimmune encephalitis.

Material and Methods: A prospective single center study at Neurological Institute of Thailand starts from July 1st, 2020, to June 30th, 2021. Serum and CSF were collected before treatment, after standard treatment and only serum cytokine were collected at 4-6 weeks after treatment. A clinical outcome was assessed with modified Rankin scale.

Results: Twenty-one patients were eligible (15 in autoimmune encephalitis group and 6 in the non – inflammatory neurological control group). Our study results showed no significant elevated of serum and CSF IL-6 in autoimmune encephalitis patients compared with control group. The CSF IL-8 showed trend for elevation in autoimmune encephalitis group compare with control [38.55 (range 21.36-71.94) VS 13.18 (range 6.44-27.64), p-value 0.079], but this increase was statistical insignificant. The serum IL-4 level was significantly low in autoimmune encephalitis group compared to normal level in control group. The other inflammatory cytokines were not differed between two groups.

Conclusion: The IL-6 level may not be the biomarker for autoimmune encephalitis. The low level of serum IL-4 may be used as the surrogate marker for autoimmune encephalitis patients.

The Study of Correlation between Serum Level of Interleukin-6 and Disease Severity in Neuromyelitis Optica Spectrum Disorder

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Abstract

Introduction: Neuromyelitis optica spectrum disorder (NMOSD) is a rare autoimmune disorder that preferentially affect the spinal cord and optic nerve. Most patients with NMOSD experience severe relapses that lead to permanent neurologic disability. IL-6 is the key of NMOSD pathogenesis and may be the marker for disease severity. Adequate studies about correlation between serum IL-6 level and disease severity in NMOSD have been lacking.

Objective: We aimed to determine the correlation between serum level of IL-6 with disease severity in NMOSD by determining the neurological disabilities.

Methods: A single center, cross sectional study of the patients with a definite diagnosis of NMO with AQP4-IgG positive from February 1st to November 30th, 2021. Patients were divided into three groups as clinical remission, new NMO diagnosis, and clinical relapse group. Demographic data, disease duration, relapse rate within 2 years of follow up, Expanded Disability Status Scale (EDSS), Optic spinal severity score (OSIS), Hauser Ambulation Index (HAI), and detail of immunosuppressive therapy were recorded and analyzed. In new diagnosis and clinical relapse group, we collected data at three different time points as follow: at the onset, at post-acute treatment and at after treatment 3 months. In clinical remission group, we collected data at two time points as follows: at the time of recruitment and at three months later. The serum and CSF level of IL-6 were also measured. The correlations between clinical finding and serum and CSF level of IL-6 in NMO were examined.

Results: There are 17 patients recruited in the study. Among these, five were clinical remission, six were new NMO diagnosis and six were clinical relapses. The serum IL-6 level was significant elevation in NMO patients with high disease severity including at onset of new diagnosis group and clinical relapse group, compared with the lower disease severity including remission group, post-acute treatment and at after treatment 3 months in new diagnosis group and clinical relapse group. The CSF and serum IL-6 levels were not correlation with disease duration and relapse rate in 2 years follow up. Only EDSS was the strongest independent variable and correlated with CSF IL-6.

Conclusion: The serum IL6 could be a biomarker to indicate disease severity of NMOSD.

The Prevalence of High Risk of Obstructive Sleep Apnea in Patients Admitted at Neurological Institute of Thailand

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Abstract

Objective Obstructive sleep apnea (OSA) is common and typically unrecognized. The diagnosis of OSA requires polysomnography which limited access. We aimed to assess the prevalence of high-risk OSA in neurologic patients accepting the simple and widely used STOP-BANG questionnaire.

Methods A cross-sectional study of 115 adult neurological patients admitted in Neurological Institute of Thailand. The high-risk OSA was assessed by positive STOP-BANG items ≥ 3 . The comparison between STOP-BANG groups and neurologic diseases were analyzed.

Results The sample comprised subjects with mean age 54.4 ± 17.3 years, 57.4% were female and 8 of 115 patients has BMI > 30 kg/m². 49 patients with Hypertension, 53 patients with hyperlipidemia and 23 patients with diabetes mellitus. 48 of 115 (41.7%) was high-risk OSA whereas 67 of 115 (58.3%) was low risk OSA ($p=0.008$). Cerebrovascular disease was high prevalence of high-risk OSA compare to low-risk OSA ($p=0.001$). No significant different was detected in other disease. Older age, high blood pressure and male gender were three most positive items of STOP-BANG whereas observed apnea was less positive item.

Conclusion The prevalence of high-risk OSA increase in neurologic disease especially in cerebrovascular disease. OSA screening may encourage in all neurologic patients.

Postictal Clinical Manifestations Related Epilepsy in Neurological Institute of Thailand

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Abstract

Background: Epilepsy and postictal symptoms affect quality of life. Postictal symptoms have a variety of manifestation, to recognize that symptoms and its factor-related could help clinician to manage properly.

Objective: To describe the postictal clinical manifestations and the factor related.

Methods: Descriptive retrospective cohort study of patients with epilepsy in Neurological Institute of Thailand, between June 2021 and November 2021. Demographic data, seizure characters and special investigations were collected and analyze.

Results: Ninety-seven clinical seizures recording from 13 patients found postictal cognitive impairment (32.99%), drowsiness (22.68%), hyperthermia (12.37%), hypertension (11.34%) headache (11.34%), sleep disturbance (10.31%) autonomic dysfunction (6.19%) language dysfunction (5.15%) and psychosis (1.03%).

Conclusions: According to our findings, cognitive impairment, drowsiness, hyperthermia, hypertension, and headache are the most common postictal clinical manifestations of epilepsy. When the seizure involved the dominant hemisphere of temporal lobe was linked to postictal tachycardia, tachypnea, verbal cognitive dysfunction, autonomic dysfunction, and language dysfunctions. Postictal drowsiness, tachycardia, tachypnea, cognitive dysfunction, autonomic dysfunction, headache, and postictal duration are strong associated to GTC seizures. To improve quality of life for patient with epilepsy must including well seizure control and management to prevent unfavorable postictal symptoms that lead the patient to well participate with others in daily living.

Etiology, Clinical Characteristics, and Treatment Outcome in Patients with Isolated Sixth Cranial Nerve Palsy

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Abstract

Objective: Isolated sixth cranial nerve palsy was the most common isolated cranial nerve palsy causing extraocular muscle dysfunction. We study the etiology, clinical characteristics, and treatment outcome in patients with isolated abducens nerve palsy.

Material and Methods: The medical records of 88 patients at the Neurological Institute of Thailand from January 2013 to December 2020 were reviewed. Clinical and demographical data included age, gender, laterality, headache location, vascular risk factors, etiology, treatment, and prognosis were collected and analyzed.

Results: The most common etiology was microvascular ischemia (29.5%), followed by inflammation (25.0%), and vascular disorders (20.5%). Neoplasm, abducens palsy mimics and false localizing sign, and idiopathic were less common (13.6%, 6.8% and 4.5%, respectively). Median age was 53.5 years old. Forty-six patients (52.3%) were male. Forty-four patients had left lateral rectus palsy, 39 patients had problem on the right, and the remaining 5 patients had bilateral involvement. Compared to microvascular ischemia, patients in inflammation group were younger ($p < 0.001$), were more likely to have headache ($p = 0.004$), and had better prognosis at 3 months ($p = 0.018$).

Conclusion: Microvascular ischemia was the most common etiology of isolated sixth cranial nerve palsy. Age at onset and presence of headache are the important clues for distinguishing CN VI palsy due to microvascular ischemia from inflammation. Prognosis was more favorable in inflammation than microvascular ischemia group. We suggest further MRI to exclude other causes before making a diagnosis of microvascular ischemia or an idiopathic.

The Relationship between Age of Thrombus and Outcomes of Cerebral Venous Sinus Thrombosis in Neurological Institute of Thailand

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Abstract

Background: The primary thrombus component is fibrin fiber (~60%), with platelets, erythrocytes, and leukocytes constituting the remainder (~40%).⁽²⁾ Thrombus strength and viscoelasticity are highly associated with fibrin features at the molecular level. With high fibrin density, the clot had been observed to be more rigid, less permeable, and more resistant to fibrinolysis.

Objective: Therefore, we were interested in acute and early subacute stages of thrombus as the main measures because, in those stages, thrombus formation may resist anticoagulant due to high fibrin density. As a result, this study may provide a reference for clinicians to optimize their clinical decision to make early appropriate management in patient with acute or early subacute stage of thrombus.

Methods: Retrospective single-center analysis of 39 patients with CVST who were hospitalized in Neurological Institute of Thailand, during 5 years between October 2015 and October 2020. The diagnosis and estimated age of thrombus was confirmed using conventional MRI. The correlation between subacute stage of intramural thrombus and functional outcome at discharge and follow up of the CVST patients were summarized and analyzed by Fisher's exact test.

Results: Data were derived from the Neurological Institute of Thailand. Among our 39 patients, 74.4% were women, and 25.6% were men. The median age of the overall population was 40, with a range of 18-78 years. Headache is the most frequent symptom, present in 74.4% of the patients. The most frequency of risk factors of CVST were OCP consumption in women (38.5%). Most of the patients in both groups had neurological improvement. No significant correlation was found between the age of the thrombus and disease progression ($P = 0.336$) or complications ($P = 1.000$). Although there was a significant correlation between functional outcome at discharge and age of thrombus ($P = 0.046$), by acute stage of thrombus had a good outcome of 53.8% and a poor outcome of 46.2%, while all of the early subacute stages of thrombus had a good outcome.

Conclusion: Our study reveals that age of thrombus from T1-weight and T2-weight sequence MR imaging (MRI) were correlation with functioning outcome at discharge. overall outcome in our study was good in both acute and early subacute stage of thrombus.

Comparison of Cognitive Impairment between Amyotrophic Lateral Sclerosis Patients and Healthy Controls in Neurological Institute of Thailand

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Abstract

Objectives: To determine the cognitive impairment in Thai Amyotrophic Lateral Sclerosis patients (ALS) by using The Thai Mental State Examination (TMSE).

Material and Methods : This is a Case-Control study analysis of 15 ALS patients and 30 healthy control people from September 1st, 2021 to December 31st, 2021 at Neurological Institute of Thailand, Bangkok, Thailand. Demographic data, ALS symptoms, ALS disease severity score, laboratory investigations, medications, and TMSE score have been analyzed.

Results: TMSE total score in ALS group was significantly lower than control group (24 and 27.5, p-value = 0.015). Judging from the score of each domains, there were the orientation and language domains which had significant differences from the control group. The orientation median score was 6 (IQR5-6) and 6 (IQR6-6) (p-value = 0.015), while the language score had wider difference as 7 (IQR5-8) and 8.50 (IQR8-9) (p-value = 0.011). Since many ALS patients in this study (6/15) had severe upper limb weakness. This findings resulted in lower scores from both 3-step command and drawing parts in language domain. Therefore, we also analyzed the subgroup of ALS patients who still had good hand motor skills (9/15) compared to matched controls (18/30). The results showed that there were no significant differences in both TMSE total score and language score. Moreover, when we excluded the 3-step command and drawing parts out of the language assessment (total score after excluded = 5), we also found no differences between case and control groups. We also found that ALS disease severity had no correlation with cognitive impairment by ALS functional rating scale, Japanese ALS severity scale, and MRC sum score.

Conclusion: The result of this study illustrates that ALS patients have certain mild cognitive impairment in the orientation domain. this TMSE examination may not be suitable for cognitive screening for ALS patients due to their requirement of good hand function in some parts of the tests and it is insensitive for assessment of executive functions. Thus, this study may support that there should be a new Thai-translated cognitive test that properly assess the ALS patients.