บทคัดย่อ

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The Impact of Comorbidities on In-hospital Mortality of Acute Stroke: An Analysis from Thailand's National Database

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Abstract

Background: Stroke remains a major public health concern and is a leading cause of mortality worldwide. Comorbidities often complicate management and influence outcomes in stroke patients, yet their specific impact on in-hospital mortality in Thailand's acute stroke population remains underexplored.

Objective: To evaluate the influence of various comorbidities on in-hospital mortality among patients with acute ischemic and hemorrhagic stroke in Thailand.

Methods: A retrospective analysis was conducted using data from Thailand's national stroke database. Comorbidities based on International Classification of Diseases, 10th Revision (ICD-10) codes were assessed for their association with in-hospital mortality using multivariable logistic regression models.

Results: Comorbidities including leukemia, coronary artery disease, atrial fibrillation, peripheral artery disease, heart failure, diabetes, chronic kidney disease, liver disease, and human immunodeficiency virus (HIV) infection were significantly associated with increased in-hospital mortality across stroke subtypes. In contrast, peptic ulcer disease and underlying malignancies, including solid tumors and lymphoma, were significant predictors of mortality in ischemic stroke but not in hemorrhagic stroke.

Conclusions: Comorbidities play a critical role in determining in-hospital mortality in stroke patients, with variations observed between ischemic and hemorrhagic subtypes. These findings underscore the need for individualized management strategies that address comorbid conditions to optimize stroke outcomes.

A Retrospective Study on Clinical Outcomes and Safety of Letta (Generic Levetiracetam) in Patient with Epilepsy in Epilepsy Clinic

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Abstract

Background: Levetiracetam, a widely used broad-spectrum antiseizure medication, is available in both original and generic formulations. However, concerns persist regarding the efficacy and safety of switching between these formulations, particularly in patients with well-controlled epilepsy.

Objective: This study aimed to assess the treatment outcomes and safety of switching from the original levetiracetam (Keppra) to the generic formulation (Letta) in epilepsy patients at Srinagarind Hospital, Thailand.

Methods: A retrospective study was conducted from January 2021 to January 2024, analyzing the medical records of 191 epilepsy patients who transitioned from Keppra to Letta. Seizure frequency and adverse effects were compared before and after the switch.

Results: A significant increase in seizure frequency was observed in patients who had previously been well-controlled on Keppra ($p < 0.001$). While 69.63% of patients maintained seizure control on Letta, 30.37% experienced an increase in seizures. Three patients reverted to Keppra due to uncontrolled seizure and one due to aggressive behavior. Additionally, 16 patients required adjunct anticonvulsants. Adverse events occurred in 9.95% of patients, primarily somnolence and aggressive behavior.

Conclusion: The switch from Keppra to Letta resulted in decreased efficacy for some patients, especially those with previously stable seizure control. Clinicians should carefully consider potential risks and explore alternative therapies or revert to the original formulation for patients experiencing increased seizures.

Scalp Fast Oscillations as a Potential Biomarker for Clinical Outcomes in Patients with Periodic Discharges

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Abstract

Introduction: Periodic discharges (PDs) in critically ill patients due to diverse pathologies are not uncommon and carry varied prognosis. Scalp fast oscillations (SFOs) have been increasingly studied its association with clinical outcomes in many conditions. However, none has assessed its values in prognostication of the critically ill patients.

Objectives: To assess the prognostic values of SFOs in prediction of short and long-term clinical outcomes in critically ill patients with PDs.

Materials and Methods: All patients aged > 15 years with detection of PDs during 2014-2022 were recruited. Converted electroencephalography (EEG) files to the standard format were used for analysis. Time-frequency analysis with fast Fourier transform was conducted using Nihon-Kohden Neurofax® wide-band analysis program. Short-term outcome was functional outcome i.e., modified Rankin Scale (mRS) assessed at discharge and 90 days after discharge. Long-term outcome was development of epilepsy. Logistic regression analysis was performed to assess the predictive value of SFOs, adjusted with significant clinical factors and conventional EEG findings.

Results: Seventy-two patients were included. Mean age was 66.53 years (SD 17.11). Higher average mean SFO frequency (p<0.001) and increased SFO number in 60 seconds ≥ 14 (0.23 Hz) (p<0.014) was associated with poor functional outcome. Further regression analysis confirmed the predictive value of SFOs in prediction of poor functional outcome, even adjusted with significant clinical factors and conventional EEG findings. Due to high number of deaths i.e., 24 (33.33%) and 32 (44.44%) at discharge and 90 days, which precludes the occurrence of epilepsy, estimation of association between SFOs and development of epilepsy as a result may be imprecise.

Conclusions: SFOs are potential biomarkers for prediction of short-term functional outcomes in critically ill patients with PDs. Its association with long-term development of epilepsy requires larger study to confirm.

Correlations of Performance on a Non-spatial Task and Episodic Memory Tests

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Abstract

Introduction: Alzheimer's disease (AD) is characterized by early neuropathological changes in the entorhinal cortex (EC), which plays a crucial role in spatial navigation and probably abstract space navigation. While EC-dependent navigation tasks show promise for early AD detection, existing paradigms require extensive learning periods, limiting clinical utility.

Objectives: To develop and validate a novel digital non-spatial navigation task that tests EC function without requiring prior learning, hypothesizing that performance would correlate with hippocampal-entorhinal cortex dependent memory but not other cognitive domains.

Materials and Methods: The study enrolled 38 participants, aged 40-70 years-old, who performed a computerized task navigating 2D abstract space using stripe and ellipse width dimensions. The task comprised 96 trials, each presenting three successive visual stimuli forming a trajectory, with participants selecting the correct fourth stimulus from three choices. Performance was assessed against standard cognitive measures, including MoCA, CDR, VPA delayed recall, WCST, Go/No-Go test, and Spatial Span.

Results: Performance decreased with increasing difficulty in distance deviation trials, suggesting navigation strategy usage. Trials with angular deviation showed possible prepositional strategy involvement. Task accuracy analyzed only with trials with distance deviation significantly correlated with episodic memory measures: MoCA delayed recall (r = 0.425, p = 0.008), MoCA memory index score (r = 0.431, p = 0.007), VPA delayed recall (r = 0.377, p = 0.020), and CDR memory (r = -0.535, p = 0.001). No significant correlations emerged with non-memory cognitive domains. Correlations persisted after adjusting for age and education, except for VPA delayed recall.

Conclusions: The study demonstrates that this novel non-spatial navigation task probably engages EC-hippocampal circuits, as evidenced by selective correlation with episodic memory measures. The task's design, requiring no prior learning period, represents a significant advantage over existing paradigms and potential clinical utility. Future research should investigate concurrent neural activities and evaluate diagnostic value participants with confirmed AD biomarkers.

Development of the Thai version of Medication Overuse Headache Assessment Questionnaire

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Abstract

Objective : This study aimed to develop and validate a Thai-language, self-administered questionnaire for screening medication overuse headache (MOH) in headache patients at the Neurology and Headache Clinic, King Chulalongkorn Memorial Hospital

Introduction : Medication overuse headache remains an important problem among headache patients worldwide. Awareness and knowledge about medication overuse headache are lacking among both headache patients and healthcare professionals. Early detection is crucial for the effective management of medication overuse headache patients. Currently, there is no tool available to detect medication overuse headache patients in Thailand.

Materials and Methods : A self-administered, Thai-language questionnaire was designed to screen for medication overuse headache based on the International Classification of Headache Disorders, 3rd edition (ICHD-3) criteria, the Leeds Dependence Questionnaire, and the Severity of Dependence Scale. The questionnaire underwent iterative refinement through consultations with headache specialists, patient feedback, and linguistic adjustments. Data were collected from 61 patients presenting with headache complaints at neurology or headache clinics. Questions were selected and optimized to maximize sensitivity and specificity, using the diagnosis made by headache specialists according to ICHD-3 criteria as the gold standard.

Results : Sixty-one headache patients completed the questionnaire most of them has diagnosis of migraine. Post-visit patient record reviews identified 10 patients diagnosed with medication overuse headache by headache specialists. Sensitivity and specificity analyses of individual questions and combinations of questions were conducted. A two-question questionnaire demonstrated the highest diagnostic accuracy, achieving 100% sensitivity (95% CI: 100–100) and 94.1% specificity (95% CI: 84.1–98.0).

Conclusion : We developed and validated the first Thai-language Medication Overuse Headache screening questionnaire that is self-administered, easy to use, quick, and demonstrates high sensitivity and specificity in headache clinic settings.

Feature Extraction and Classification Using Smartphone-Based Alternating Tapping Tasks for Distinguishing Parkinson's Disease from Healthy Individuals

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Abstract

Introduction: Parkinson's disease (PD) is a progressive neurodegenerative disorder that disrupts both motor and non-motor functions. Detection of motor symptoms, particularly bradykinesia, is challenging since it is based on individual clinical evaluation skills. Accurate and continuous assessment of these symptoms is crucial for effective, individualized therapy. Thus, smartphone-based technologies, offering precise and repeatable measures of motor performance, may improve early screening, routine follow-up, and telemedicine applications.

Objectives: We aimed to determine the reliability of a simple smartphone-based alternating tapping task that could distinguish PD from healthy controls, and to identify which tapping metrics best capture bradykinesia beyond conventional interval-based measures.

Materials and Methods: A total of 115 individuals with PD in any motor stages (ON/OFF or dyskinetic stages) and 726 healthy controls performed a 10-second alternating tapping test on a smartphone. We extracted a range of parameters, including inter-tap interval, tapping rhythmicity, repeated tap, tapping accuracy, tapping area, and spatial dispersion that reflect spatiotemporal components of fine motor controls. All parameters were compared between groups using the Mann-Whitney test. Multivariate logistic regression analysis was performed to identify tapping parameters that can differentiate between PD and controls, with the model's discriminative ability being evaluated using the area under the receiver operating characteristic curve (ROC-AUC), and the results were reported as the adjusted odds ratios (OR) with 95% confidence intervals.

Results: A total of 490 and 726 records of PD and controls were analyzed. All temporospatial tapping parameters were significantly different between PD and controls ($p < 0.05$ all) except inter-tap interval ($p=0.212$) and correct taps interval ($p=0.075$). Multivariate logistic regression revealed that standardized correct tapping score (OR=0.037, $p<0.001$), tapping location dispersion (OR=19.178, $p=0.003$), temporal tapping unpredictability (OR=10.897, $p<0.001$), holding duration (OR=0.132, $p<0.001$) and variability of inter-tap interval (OR=1.478, $p=0.001$) were the important features for differentiating PD from controls, achieving an ROC-AUC of 0.775.

Conclusions: Our study using a smartphone-based alternating tapping paradigm integrating multi-faceted tapping parameters showed that inaccuracy and variability of temporospatial fine motor controls were the key features of impaired dexterity in individuals with PD. The demonstration of robust diagnostic metrics by logistic regression underscores this approach could be a promising digital biomarker for PD monitoring and facilitating early detection.

Elevated Neutrophil-to-lymphocyte Ratio is an Independent Predictor for Post-stroke Epilepsy after Ischemic Stroke: A Competing Risk Study

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Abstract

Background: Post-stroke epilepsy (PSE) is associated with increased morbidity and mortality, yet reliable predictors for its occurrence remain undefined. The systemic immune-inflammation index (SII), an inflammatory marker, has shown promise in other inflammatory diseases, but its association with PSE is not well established.

Objective: This study aimed to investigate the relationship between the SII, measured during hospitalization, and the development of PSE in patients who suffered from ischemic stroke.

Methods: This retrospective cohort study included the patients aged 18 and above, who were hospitalized for ischemic stroke at our center between 1 Jan 2014 to 31 Dec 2017 and followed until the end date i.e., 31 Aug 2024. Patients were excluded if they had a prior diagnosis of epilepsy or lacked of complete blood count (CBC) data during the defined period. SII including neutrophil-to-lymphocyte ratio (NLR), platelet-to-lymphocyte ratio (PLR) and hemoglobin-to-lymphocyte ratio (HLR) was calculated from routine CBC data. Its association with PSE was assessed using test of difference and competing risk statistical analysis.

Results: A total of 1,445 patients were included in the analysis, with 43 patients (2.98%) developing PSE. The PSE group had a longer length of stay (9 vs. 6 days, p=0.003) and higher mortality (20.93% vs. 10.91%, p=0.049). NLR was significantly higher in the PSE group (3.45 vs. 2.94, p=0.036). Multivariate competing risk analysis showed NLR > 7 was an independent predictor for PSE (SHR = 2.20, p=0.024).

Conclusions: Our study found that an elevated NLR was an independent predictor of PSE following ischemic stroke. It may be valuable biomarker to be used in conjunction with a clinical prediction model i.e., SeLECT score to identify the patients at increased risk for PSE. Neuroprotective agents targeting on anti-inflammatory treatment in acute stroke to prevent PSE and reduce mortality is of great interest to be explored.

Reference Values of Plasma Neurofilament Light Chain Level in Thai Healthy Population

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Abstract

Background: Aging has consistently been observed as a significant confounding factor influencing the levels of plasma Neurofilament Light Chain (NfL) which is a potential biomarker for neurodegenerative diseases. Although age-specific cutoff values have been reported for healthy Caucasian populations, evidence suggests potential variations in the plasma NfL levels among ethnically and socioeconomically underrepresented populations.

Objective: To assess and establish the normal cutoff value for plasma NfL in healthy Thai population

Method: This was a descriptive cross-sectional study. Healthy participants aged 17 years and above were included from 4 sites: Comprehensive Geriatic Clinic at King Chulalongkorn Memorial Hospital, the Cognitive Aging Cohort, Sabaisamong Initiatives and Blood donors from Thai Red Cross Society, Bangkok, Thailand. Plasma NfL levels were quantified using the single molecule array (Simoa®) NF-light™ Advance kit. Age-specific cutoffs for plasma NfL level were determined using an age-partitioned model.

Results: A total of 485 plasma NfL measurements from four cohorts (38.6% male, mean age 58.81 years) were analyzed, showing a significant positive correlation with age (r^2=0.272,β=0.338, $p<0.001$), with a sharp increase after 60–70 years. Age-specific reference limits were derived by grouping participants into decade-based intervals. Reference limits (95th percentile) ranged from 7.65 pg/mL for participants aged ≤30 years to 65.17 pg/mL for those aged 81–90 years, highlighting an age-dependent increase in plasma NfL levels. No significant association with sex was observed.

Conclusion: This study established age-specific reference values for plasma NfL in healthy Thai population, supporting its use as a biomarker for neurodegenerative diseases. While robust, further research with larger cohorts is needed to improve generalizability.

Behavioural and Psychological Impacts of Plasma Phosphorylated-tau Disclosure on Preclinical and Prodromal Alzheimer's Disease Patients

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Abstract

Background: Plasma phosphorylated tau-217 (p-tau217) is a promising biomarker for Alzheimer's disease (AD) pathology, but its disclosure to cognitively unimpaired individuals remains controversial. This study aimed to evaluate the behavioral and psychological effects of p-tau217 disclosure, specifically examining changes in physical activity and depressive symptoms.

Methods: A prospective cohort study was conducted at King Chulalongkorn Memorial Hospital, enrolling cognitively unimpaired individuals who opted to receive their p-tau217 results. Physical activity levels were assessed using the International Physical Activity Questionnaire (IPAQ) and adherence to dementia prevention exercise guidelines. Depressive symptoms were evaluated using the Patient Health Questionnaire-9 (PHQ-9) at baseline and 3-month follow-up. Bowker's test and McNemar's test were used for physical activity analyses, while Wilcoxon signed-rank tests assessed within-group changes in PHQ-9 scores.

Results: Following p-tau217 disclosure, there was a nonsignificant trend toward increased physical activity, with participants shifting from lower to moderate or high IPAQ activity levels. However, the proportion meeting formal dementia prevention exercise guidelines remained unchanged ($p = 0.585$). Depressive symptoms significantly increased post-disclosure ($p = 0.0124$), with a greater effect observed among p-tau–negative participants ($p = 0.0152$), whereas p-tau–positive individuals exhibited minimal changes ($p = 0.5625$).

Conclusion: These findings suggest that while p-tau217 disclosure may influence physical activity, it may not be sufficient to drive sustained adherence to exercise guidelines. Additionally, disclosure had a measurable psychological impact, particularly for p-tau–negative individuals, emphasizing the need for tailored counseling to mitigate distress. The study's selection bias toward highly educated and high-income individuals and its limited statistical power should be considered when interpreting the results. Future research should focus on long-term behavioral adaptation and the development of structured interventions to support informed decision-making in AD biomarker disclosure.

Interactions between Antiseizure Medications and Non-vitamin K antagonist Anticoagulants: A Systematic Review and Meta-analysis

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Abstract

Background: The interaction of antiseizure medications (ASMs) and non-vitamin K antagonist oral anticoagulants (NOACs) raises concerns about an increased risk of thromboembolic events and major bleeding compared to those on NOACs alone. This systematic review and meta-analysis aimed to evaluate the interactions between antiseizure medications and NOACs

Objective: To assess the impacts of interactions between ASMs and NOACs on clinical outcomes i.e., thromboembolic events and major bleeding.

Methods: Our study protocol was registered in the PROSPERO. We performed literature searching from 2 electronic databases i.e., PubMed® and Scopus® from the inception date to October 7th, 2024. Eligible criteria for article selection were animal or human study either pediatric or adult populations and excluding review articles. Two reviewers (S.P. and P.T.) conducted an independent searching, article selection and data extraction. Outcomes with sufficient data were pooled using a random effect model.

Results: Forty-seven studies were included for analysis. Patients receiving NOACs concurrently with ASMs not specified increased thromboembolic events [pooled risk ratio (RR) 2.96 (95% CI 1.06, 8.25); p=0.04] in comparison with patients receiving NOACs alone. NOACs patients administered with phenytoin (PHT) concomitantly with NOACs exhibited increased significant risks for major bleeding [pooled RR 2.74 (95% CI 2.46, 3.04); p<0.001]. Insignificant increased risks of both thromboembolic events and major bleeding were noted when taking levetiracetam (LEV) concurrently with NOACs, with pooled RR 1.47 [(95% CI 0.66, 3.28); p=0.35] and 1.70 [(95% CI 0.44, 6.53); p=0.44], respectively.

Conclusion: Based on current evidence with limited data, there was evidence of increased risks of both thromboembolic events and major bleeding when taking ASMs concomitantly with NOACs. Taking concurrent ASMs not specified and PHT significantly increased risks of thromboembolic events and major bleeding, respectively.

Effects of Antiseizure Medications on Balance and Gait Performance in Elderly Patients with Epilepsy

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Abstract

Objective: To study the effects of antiseizure medications on balance and gait performance in elderly patients with epilepsy.

Background: Patients with epilepsy have a higher risk of falling than the general population. Poor balance and gait performance is one of the most important factors contributing to falling. Few studies have compared the effects of antiseizure medications (ASMs) on balance and gait performance, especially in elderly patients with epilepsy.

Material and Methods: A cross-section of patients aged 50-70 years with cryptogenic epilepsy who had received a single ASM were enrolled. Static and dynamic balance performance were assessed using posturography, and gait performance was assessed using a triaxial accelerometer device.

Results: A total of 28 patients were recruited, divided into 4 groups according to the different mechanisms of action of the ASMs they had received: 5 had received GABA-ergic ASMs, 7 had received ASMs with multiple mechanism of actions, 6 had received an SV2A blocker, and 10 had received sodium channel blockers. Compared to the non-GABA-ergic patients, those in the GABA-ergic group had higher postural sway, especially in longitudinal range of static balance (14.99 mm vs 10.04 mm, p-value = 0.045). Similarly, with gait performance, patients in the GABA-ergic group had a higher percentage of asymmetrical step time at a comfortable gait speed (6.12% vs 3.13%, p-value = 0.037) and had lower harmonic ratio parameters, especially vertical direction, at both comfortable and maximum speed (2.29 vs 3.36, p-value = 0.011 for comfortable speed and 2.68 vs 3.76, p-value = 0.017 for maximum speed).

Conclusion: Elderly patients with epilepsy who receive GABA-ergic ASMs have worse balance and gait performance than those who receive non-GABA-ergic antiseizure medications. We advise that patients who take a GABA-ergic drug like phenobarbital should be alerted to be extra careful about falling.

Factors Influencing the Time to Diagnose Parkinson's Disease in Thai Patients

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Abstract

Introduction: PD is a neurodegenerative disorder where early diagnosis and treatment can significantly enhance quality of life. However, many patients experience delays between symptom onset and clinical diagnosis.

Objectives: To investigate factors influencing the time to diagnose Parkinson's disease (PD) in Thai patients.

Materials and Methods: We conducted a retrospective review of patients newly diagnosed with PD between June 2019 and June 2024. Demographic data, time from motor symptom onset to first clinic visit (OTV) and clinic visit to PD diagnosis (VTD), presenting motor and non-motor symptoms, and Hoehn and Yahr (HY) staging were collected and analyzed.

Results: A total of 109 patients were included. The median OTV and VTD were 360 and 10 days, respectively. Tremor was the most common initial symptom (76%), whereas slowness of movement was reported in only 38% of cases. A notable discrepancy was observed between patients' self-reported slowness and bradykinesia identified on examination. The median HY at diagnosis was 2. Initial misdiagnosis occurred in 55% of cases. Significant correlations were found between diagnosis delay and factors such as being initial evaluated by a non-neurologist, presenting with slowness, and advanced HY stage. Patients diagnosed earlier predominantly presented with tremor, while those diagnosed later exhibited higher rates of postural instability and axial involvement.

Conclusion: The OTV period represents the longest delay PD diagnosis. Tremor is the is a key symptom prompting patients to seek medical attention. Neurologists play a crucial role in diagnosis, and increasing public awareness of non-tremor symptoms may facilitate earlier recognition and management.

Correlation of ASPECT Score, Affected Regions, and Clinical Outcomes in Patients with Large Vessel Occlusion

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Abstract

Introduction: Acute ischemic stroke (AIS) due to large vessel occlusion (LVO) is a major cause of disability and mortality. The Alberta Stroke Program Early CT Score (ASPECTS) is widely used to assess ischemic burden, but the prognostic significance of infarct volume and specific brain regions remains unclear.

Objectives: This study aims to evaluate the relationship between ASPECTs region, infarct volume, and clinical outcomes. It also examines whether infarction volume provides stronger predictive value than ASPECT scores alone.

Materials and Methods: A retrospective cohort study of 200 AIS-LVO patients admitted to Thammasat University Hospital (July 2018–January 2022). The primary outcome was to identify which ASPECTS regions were associated with poor clinical outcomes (mRS 3–6). The secondary outcomes included evaluating the relationship between infarction volume (quantified by the number of affected CT slices) and clinical outcomes, as well as assessing the correlation between the total ASPECTS score and clinical outcomes

Results: Among 200 patients, 98 underwent mechanical thrombectomy (MT). In the MT group, infarction in the insular cortex (OR 3.67, $p = 0.006$) and M5 (OR 2.30, $p = 0.048$) was significantly associated with poor outcomes. Infarct volume ≥9.5 slices at admission and ≥18.5 slices post-treatment strongly predicted poor outcomes (AUC 0.68, 0.78). Univariate logistic regression confirmed infarct volume as a significant predictor ($p < 0.05$). ASPECTS ≥6.5 was associated with favorable outcomes (AUC 0.703).

Conclusion: Infarction in the insular cortex and M5 predicts worse outcomes, particularly in MT patients. Higher ASPECTS (≥7) correlates with favorable prognosis, whereas greater infarct volume (≥9.5 slices at admission, ≥18.5 slices post-treatment) is linked to poor outcomes.

Clinical Manifestations and the Impact of Immunosuppressive Therapy and Thymectomy in Myasthenia Gravis: A Retrospective Observational Study

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Abstract

Introduction: Myasthenia Gravis (MG) is a rare autoimmune disease characterized by neuromuscular junction disruption, primarily associated with acetylcholine receptor (AChR) antibodies. Effective management strategies include immunosuppressive therapy and thymectomy, though outcomes and treatment patterns vary.

Objective: To analyze clinical manifestations, laboratory findings, treatment regimens, and outcomes in MG patients, comparing immunosuppressive versus non-immunosuppressive therapies and thymectomy versus non-thymectomy interventions.

Materials and Methods: This retrospective observational study included 183 MG patients treated at Thammasat University Hospital from October 1, 2019, to October 1, 2024. Clinical data, including demographics, antibody status, therapeutic approaches, and outcomes based on MGFA-PIS scores, were analyzed using appropriate statistical methods.

Results: Among 183 patients (138 females, 45 males), females exhibited a higher prevalence of MG onset before 50 years. Generalized MG was significantly more common in patients receiving immunosuppressive therapy (49.7%), prednisolone-based therapy (70.9%) and those undergoing thymectomy (70.7%). Most patients (79.2%) received immunosuppressive therapy, predominantly prednisolone-based regimens. Patients undergoing thymectomy and immunosuppressive therapy had significantly higher frequencies of minimal manifestations (MM1-MM3) outcomes. AChR antibody positivity was higher in these groups.

Conclusion: Immunosuppressive therapy and thymectomy are integral to MG management, particularly in AChR antibody-positive patients, achieving favorable clinical outcomes and minimal disease manifestations.

Efficacy and Safety of Lemborexant Compared to Placebo in Medical Personnel Rotating Shift Workers: A Randomized, Double-blind, Placebo-controlled Trial

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Abstract

Background: The disruption of natural sleep cycles by shift work causes shift work disorder (SWD). SWD has negative impacts on physical and mental health as well as working performance. The data on using Lemborexant for improving sleep quality after off shift duty for rotating medical personnel is insufficient.

Objectives: This study aims to evaluate the efficacy and safety of Lemborexant, in enhancing sleep performance and neuropsychological outcomes among volunteers who were medical personnel rotating shift workers, diagnosed with SWD.

Materials and Methods: This study was a randomized, double-blind, placebo-controlled trial, contacted at Phramongkutklao Hospital. The participants were allocated into 2 groups: Lemborexant (5 mg tablet/time) and placebo (identical to Lemborexant).

The studied medication was taken when the volunteers were off duty and ready to sleep. Sleep hygiene was introduced to all participants. Parameter from a standardized actigraphy watch and neuropsychological tests, and Thai version of self-rating questionnaires were compared after treatment.

Results: Total 26 volunteers, 15 in Lemborexant group and 11 in placebo group, were compared. In Lemborexant group, the sleep efficiency significantly "rose" from 75.0% (SD 5.7) at baseline to 79.4% (SD 2.4), p-value 0.027. In placebo group, the sleep efficiency "dropped" from 76.5% (SD 2.9) at baseline to 75.2% (SD 3.0), p-value 0.04. Sleep efficiency was better after using Lemborexant compared to placebo; p-value was 0.013. Also, Lemborexant improved other sleep parameters, scores of neuropsychological batteries, and quality of life. Only 2 and 1 partisans in Lemborexant group and placebo group experienced side effects which were hypersomnolence, p-value 0.61.

Conclusion: The findings support the safety and benefit of Lemborexant on sleep promoting effect for rotating medical shift workers during off duty period.

Simple and Effective OnabotulinumtoxinA Injection Technique for Hemifacial Spasm

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Abstract

Background: Hemifacial spasm (HFS) can be safely and effectively treated with botulinum toxin (BoNT). There is ongoing debate over the dosage, duration, and technique of the injections.

Objective: To determine whether fixed-site and fixed-dose BoNT injections for HFS were easy to administer, safe, efficacious, well-tolerated, and practical.

Methods: In patients with HFS, onabotulinumtoxinA was injected into four distinct locations at orbital sections of the orbicular oculi muscle at a dose of 5 U/0.1 milliliters. Primary effectiveness was evaluated following injections using the Thai version of the Hemifacial Spasm Questionnaire-30 (Thai HFS-30). Secondary efficacy was measured using the 6-point disability rating scale and the self-assessment of symptom improvement.

Results: At two, four, eight, and twelve weeks after treatment, the mean total Thai HFS-30 score dropped significantly from 48.88 at baseline to 9.63, 7.71, 9.41, and 35.06, respectively. At weeks 0, 2, 4, 8, and 12 after injections, there was a statistically significant decrease ($p < 0.001$) in the mean 6-point disability rating scale. 71% of patients had improved by more than 80%, 20% by 60–80%, and only 8% by 20–60%, according to the fourth week's self-assessment. Furthermore, no patient reported improvement of less than 20%. It is noteworthy that no reports of mouth drooping or ptosis were made.

Conclusion: Significant improvements were observed in several symptom and quality of life measures following onabotulinumtoxinA injections administered at particular locations and dosages. Many HFS patients may benefit from this safe, useful, and efficient injection procedure, even with little prior experience.

A Randomized, Double-blind, Controlled Trial Comparing Onabotulinumtoxin A with 1% Lidocaine in Postherpetic Neuralgia

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Abstract

Background: Postherpetic neuralgia (PHN) is persistent pain that lasts more than three months after the acute herpes zoster infection has resolved. This study compares the efficacy of botulinum toxin-A and lidocaine in reducing pain and improving quality of life using a controlled injection technique.

Methods: After patients were blinded and randomly assigned to receive onabotulinumtoxinA subcutaneously or lidocaine subcutaneously, blind evaluation of the Visual Analog Scale (VAS) as the primary outcome and secondary outcomes, including pain reduction, quality of life as measured by the EQ-5D-5, and the need for additional pain-controlled medications, were carried out.

Result: There was no statistically significant difference in the VAS of the two groups; however, the onabotulinumtoxinA group showed a tendency toward a lower pain score. OnabotulinumtoxinA showed a statistically significant better than lidocaine group in usual activities domain scores on the EQ-5D-5L at 12 weeks ($p = 0.047$). Additionally, a higher proportion of patients in the onabotulinumtoxinA group reported pain reductions of 30% or more.

Conclusion: For people with PHN, both onabotulinumtoxinA and lidocaine are effective, safe, and relatively simple to inject. OnabotulinumtoxinA improved quality of life and reduced pain slightly more than lidocaine when both were injected subcutaneously.

Belief and Mindset in Thai People with Epilepsy

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Abstract

Introduction: Epilepsy is a common condition with significant morbidity. It was found that managements for individuals with epilepsy are influenced by religious and cultural beliefs. We aimed to identify beliefs and their relationship to the seizure outcome among Thai patient with epilepsy.

Objective: To identify the frequency of beliefs regarding epilepsy and their relationships to seizure outcome.

Materials and Methods:This cross-sectional study was conducted at Neurology Division of Phramongkutklao Hospital. Consecutive adult epilepsy patients who consented to the study were enrolled. The participants completed a structured questionnaire regarding epilepsy etiologies, triggers, behaviors and managements.

Results: Total of 70 patients were enrolled, average age of 52.0-year-old, 37 patients (52.9%) were women. Thirty-nine (55.7%) graduated with at least a bachelor's degree; 68 (97.1%) were Buddhism; 39 (55.7%) were living in rural area. There were 33 patients (47.1%) who had inactive seizure at least 4 weeks and 37 patients (52.9%) who had ongoing seizures. Compared between the inactive seizure group and the ongoing seizure group, it was found that patients in the inactive seizure group significantly lived in Bangkok more than the ongoing seizure group: 19 (57.6%) versus 12 (32.4%), ($p = 0.035$). In addition, the inactive seizure group had a significantly higher educational level than the ongoing seizure group: 24 (72.7%) versus 15 (40.5%), ($p = 0.007$). There was no significant about the superstitions and beliefs regarding etiology, triggers, general knowledge and treatments between the inactive seizure group and the ongoing seizure group.

Conclusion: The superstitious or beliefs are uncommon in Thai people with epilepsy. Epilepsy outcome is correlated with high education.

Efficacy of Folic Acid Combined with Atorvastatin in Lowering Lipid Level and Preventing Complications in Acute Ischemic Stroke Patients: A Randomized Control Trial; An Interim Analysis

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Abstract

Background: Lowering lipid levels, particularly achieving an LDL of less than 70 mg/dL, is critical for preventing secondary strokes. A recent study demonstrated the benefits of combining folic acid with pravastatin to reduce LDL levels in patients who have experienced ischemic strokes. Given its rarity of toxicity and classification as a National Essential Drug, we are interested in adding folic acid to atorvastatin to enhance its lipid-lowering effects and decrease post-stroke complications.

Objective: This study aims to evaluate the efficacy of folic acid in comparison to a placebo when combined with atorvastatin. The primary outcome is achieving an LDL level of less than 70 mg/dL within six months. Secondary outcomes include assessments of other lipid profiles, homocysteine, hs-CRP, and clinical assessments.

Methods: Ischemic stroke patients were randomized and double-blinded to receive either folic acid(5mg) or a placebo. All participants were required to take atorvastatin(40mg) and were followed for six months. Lipid profiles, hs-CRP, and Modified Ranking Scale (MRS) were measured at two weeks, three months, and six months. Homocysteine, the Stroke Impact Scale (SIS), and the MoCA test were conducted at three and six months.

Results: A total of 57 participants were enrolled in the study, but only 37 completed the trial. Among these, nine out of 37 participants (24.32%) achieved the primary outcome; however, there was no significant difference between the intervention and control groups (p-value 0.395, 95% CI: 0.4-8.8). MRS, SIS, and MoCA tests tend to improve over time. The laboratory profiles and clinical complications were not significantly different between the two groups.

Conclusion: This interim analysis had not shown the additional benefits of folic acid when combined with atorvastatin. The efficacy of folic acid should be further investigated.

Efficacy of A Mobile Application to Improve Anti-seizure Medication Adherence in Uncontrolled Epileptic Patients

Thanakrit Aromchien
Ramathibodi Hospital

Abstract

Introduction: A mobile application has potential to improve anti-seizure medication (ASM) adherence.

Objectives: To determine the efficacy of a mobile application to improve ASM adherence in uncontrolled epileptic patients.

Materials and Methods: From October 1, 2024, to January 15, 2025, a prospective study was conducted at Ramathibodi Hospital. Inclusion criteria were age ≥ 18 years old with history of ASM nonadherence, and recent seizure within 3 months. The compliance of ASM was compared before and after using the application at a 30-day follow-up. The Medication Adherence Scale for Thais (MAST) and a number of seizures were used as primary and secondary outcomes, respectively. We evaluated its efficacy and accuracy by seizure control and absolute pill count, respectively.

Results: Twelve patients with mean age of 29.25±7.71 years were eligible for analysis. Most of them were female (66.67%) with median number of seizures 1.5 times per month and using at least two ASMs. For primary outcome, mean MAST was significantly increased from baseline to follow-up (32±1.54 vs 37.42±2.11; $p < 0.001$). The number of seizures during pre- and post-intervention were significantly different. But the median number of seizures did not show any difference [1.5 (1, 4.5) vs. 1.5 (0, 2.5); $p < 0.012$]. Five patients (41.67%) had seizure freedom at 30 days follow-up. The absolute pill count was 94.67±4.77%. Five patients with seizure freedom had 100% absolute pill count.

Conclusion: This mobile application has shown some effects on improving self-management and seizure control in non-adherence patients. A larger study is needed to evaluate its efficacy.

Localization of Riddoch Phenomenon Using Magnetic Resonance Imaging

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Abstract

Background: The Riddoch phenomenon refers to the ability of individuals with homonymous hemianopia to consciously perceive preserved visual motion within their blind field of vision. A direct pathway connecting the lateral geniculate nucleus and V5 underlies the Riddoch phenomenon. By using diffusion tensor imaging, a recent study found a correlation between the connectivity fiber density between the Riddoch phenomenon and the contralateral lateral geniculate nucleus and V5 tract. The Riddoch phenomenon is the difference between the performance of motion perimetry and static perimetry. Aim To evaluate a correlation between specific neuroanatomical regions and the Riddoch Phenomenon.

Methods: This retrospective study was conducted at a single center involving adults aged 18 years and older who had homonymous visual field defects resulting from a stroke. We reviewed electronic medical records, visual field records, and brain MRI data collected between October 2019 and September 2024.

Results: The study involved fifty-six patients who had homonymous hemianopia as a result of a stroke. The calculated polychoric correlation coefficient of 0.436 between the preserved V5 area and the Riddoch phenomenon suggests a moderate positive relationship. In a subgroup analysis, a multiple logistic regression revealed that patients with unilateral V5 lesions were 21.94 times more likely to experience the Riddoch phenomenon compared to those without such lesions (P-value = 0.005).

Conclusion: While the visual pathway is an extensive network involving many higher cortical areas, these findings highlight the crucial role of V5 in detecting movement.

Clinical Characteristics and Outcomes in Minor Ischemic Stroke Patients with Negative Diffusion-weighted Imaging Compared with Positive Diffusion-weighted Imaging.

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Abstract

Background: Stroke is a major global cause of mortality and disability, necessitating rapid diagnosis and treatment. Diffusion-weighted imaging (DWI) is highly sensitive for detecting acute ischemic stroke (AIS); however, up to 6.8% of AIS cases and 40–60% of minor strokes may be DWI-negative. Limited research exists on the prognosis of DWI-negative cases, particularly in the Thai population. This study aims to enhance treatment strategies by assessing clinical outcomes in DWI-negative and DWI-positive minor ischemic stroke patients.

Methods: This retrospective, single-center study reviewed medical records, MRI findings, and laboratory investigations. Patients were categorized into DWI-negative and DWI-positive groups, with comparisons made using univariate and multivariate analyses, particularly for mRS and National Institutes of Health Stroke Scale (NIHSS) scores.

Results: A total of 200 patients were analyzed (mean age: 66.8 years; predominantly male). The median initial NIHSS score was 3. Lacunar syndrome was the most common presentation (74.5%), with motor weakness reported in 29%. The median time from stroke onset to MRI was 48 hours. DWI-negative patients (20.5%) had significantly more sensory symptoms (48.8% vs. 27%, $p = 0.013$) and a higher prevalence of small vessel occlusion (80% vs. 73%, $p = 0.098$). At 3 months, severe disability (mRS 3–6) was more common in DWI-positive patients (18.2%) than in DWI-negative patients (2.4%) (RR 7.47, 95% CI 1.04–53.28, $p = 0.012$).

Conclusion: DWI-negative ischemic stroke was prevalent in minor IS patients and was significantly associated with better prognostic outcomes, highlighting the potential role of DWI in stroke management.

Quantitative Sensory Testing Values and Patterns in Normal and Pathological Populations: Insights from Peripheral and Central Nervous System Lesions

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Abstract

Introduction: Quantitative Sensory Testing (QST) is a non-invasive method for evaluating small fiber neuropathy and has commonly been used in clinical practice. Typically, QST normative values are derived from Western populations, leading to a significant gap in data applicable to Asian demographics, particularly the Thai population.

Objectives: This study aimed to establish localized normative values for the Thai population and to analyze QST's application in the central nervous system (CNS) and peripheral nervous system (PNS) lesions.

Materials and Methods: In this prospective study. 100 Thai participants underwent QST to measure cold temperature threshold (CTT), warm temperature threshold (WTT), cold induced pain threshold (CIP), and heat induced pain threshold (HIP). A subsequent analysis focused on identifying data and pattern associated with CNS and PNS lesions.

Results: The participant cohort consisted of 77 females and 23 males, with a mean age of 45 years. The mean normal QST values for CTT/WTT/CIP/HIP in the right thenar, left thenar, right dorsum of the foot, and left dorsum of the foot were 29.02, 28.64, 25.64, 25.58 / 34.79, 35.19, 40.38, 40.99 / 18.63, 20.11, 18.66, 17.93 and 41.67, 41.01, 45.88, 46.23 respectively and showed variations in QST values based on age, genders and body sites testing. However, no distinct QST patterns were observed in CNS and PNS lesions.

Conclusion: This study successfully establishes QST reference values for the Thai population. However, no specific patterns were identified in CNS and PNS lesions. Therefore, additional diagnostic modalities are necessary for accurate diagnosis in these groups.

Nutritional Status in Multiple Sclerosis, Neuromyelitis Optica Spectrum Disorder, and Myelin Oligodendrocyte Glycoprotein Antibody-Associated Disease Patients at Siriraj Hospital

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Abstract

Introduction: Central nervous system inflammatory demyelinating diseases (CNSIDDs), including multiple sclerosis (MS), neuromyelitis optica spectrum disorder (NMOSD), and Myelin Oligodendrocyte Glycoprotein Antibody-Associated Disease (MOGAD), have been linked to malnutrition in previous studies. However, there is still a lack of data for the Thai CNSIDD population and a direct comparison between MS, NMOSD, and MOGAD patients.

Objectives: To assess the prevalence of malnutrition among patients with CNSIDD, compare malnutrition rates and quality of life in patients with relapsing disease, explore the relationship between malnutrition and quality of life, and identify factors associated with malnutrition in this patient population.

Materials and Methods: This questionnaire-based cross-sectional study was conducted at Siriraj Hospital from January 2022 to December 2024. The inclusion criteria of this study were patients aged over 18 years with MS, NMOSD, or MOGAD within 3 months from the first symptoms were recruited to be evaluated for a Mini-nutritional assessment (MNA) and 36-item Short Form Survey (SF-36) and follow-up evaluation at 3 months. The previously diagnosed patients who were stable for more than 3 months would only be evaluated for MNA and SF-36 as the first follow-up. Factors including demographic data, disease duration, severity, Mini Nutritional Assessment (MNA) scores, and quality of life assessed by SF-36 were analyzed.

Results: This study consisted of 222 (105 NMOSD, 100 MS, and 17 MOGAD) patients, with an average age of 46.19 (SD 15.15) years old, and 188 (84.7%) females, with 18 patients having relapse within 3 months from the onset. Overall, 45.90% of patients were at risk of or had definite malnutrition. MOGAD patients exhibited a higher risk of malnutrition, although there were no statistically significant differences in MNA scores among the patient groups ($p = 0.331$). The relapse group showed no significant differences in weight, BMI, EDSS, MNA scores, nutritional status, or SF-36 between initial and three-month follow-up evaluations. Correlation analysis revealed significant negative relationships between MNA scores and age, BMI, and EDSS, as well as between SF-36 scores and age, EDSS, and MNA.

Conclusion: Individualized nutritional support and monitoring are essential components of comprehensive care for individuals with demyelinating diseases to enhance their health outcomes and quality of life. Future studies should focus on exploring the underlying causes of nutritional deficiencies in these populations and developing tailored dietary strategies to mitigate these risks effectively.

The Clinical Study of Early-Onset Dementia in Siriraj Hospital : A Retrospective Single Centre Study and Literature Review

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Abstract

Introduction : Early-onset dementia (EOD), characterized by symptom onset before age 65, significantly impacts individuals during their productive years. The condition's relative rarity and complex clinical manifestations present unique challenges for patients and their families, necessitating a comprehensive understanding to develop effective support and intervention strategies.

Objective : This study analyzes clinical characteristics and subtype correlations among patients with EOD at Siriraj Hospital since 2014, focusing on variations in clinical presentations and Goldman scores.

Materials and Methods : This retrospective study examined medical records of 125 patients diagnosed with dementia at the EOD clinic. The analysis encompassed demographic characteristics (age, sex, education level), age of symptom onset, eight categories of clinical presentations, duration of symptoms prior to diagnosis, and Goldman scores.

Results : The study population demonstrated a mean age of 60.6 years, with an average symptom onset at 59.0 years; female patients constituted 61.6% of the cohort. Predominant clinical manifestations included social symptoms (119 patients, 95.2%) and cognitive symptoms (119 patients, 91.2%), followed by affective and behavioral symptoms (29 patients, 23.2%). Most patients (58 patients, 46.4%) presented with multiple affected domains, with symptoms typically persisting for approximately one year before diagnosis. Upon subtype reclassification, early-onset Alzheimer's disease emerged as the predominant diagnosis (53.6% of cases), with most patients exhibiting Goldman scores of 4 (61.6%).

Conclusion : These findings emphasize the critical need for enhanced awareness and refined diagnostic strategies for EOD. Prompt identification and intervention are essential not only for optimizing patient outcomes but also for mitigating caregiver burden.

Eye Movement Disorders in Central Nervous System Demyelinating Diseases: A Single-Center Cross-Sectional Study

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Abstract

Background: Immune-mediated lesions in demyelinating diseases can affect various parts of the central nervous system (CNS), leading to distinct clinical phenotypes and disability. Eye movement abnormalities, commonly observed in these conditions, reflect disruptions in neural pathways and correlate with neurological disability.

Objectives: To study the prevalence and clinical features of eye movement abnormalities in CNS demyelinating diseases.

Methods: We conducted a prospective cross-sectional study at the Multiple Sclerosis and Related Disorders Clinic, Siriraj Hospital, between July 2023 and November 2024. Patients with relapsing-remitting multiple sclerosis (RRMS), seropositive neuromyelitis optica spectrum disorders (NMOSD), and myelin oligodendrocyte glycoprotein antibody-associated disease (MOGAD) were included, excluding those within 6 months of a recent attack. Comprehensive neurological and ophthalmological evaluations, including qualitative video ocular motor recording, were performed.

Results: This study analyzed 149 patients with CNS demyelinating diseases (65 MS, 69 AQP4+ NMOSD, 15 MOGAD). MS had earlier onset, while NMOSD showed the worst visual acuity and more severe field abnormalities. MOGAD had thinner retinal thickness and higher brain volumes. Eye movement abnormalities were 80.5%, with MS showing more dissociated abducting nystagmus (10.8%) while NMOSD had the worst visual acuity and more severe visual field abnormalities, MOGAD more exotropia. Nystagmus correlated with earlier onset (29.5 vs. 37.1 years, p=0.007), more attacks (3 vs. 2, p=0.015), worse visual outcomes (p=0.041).

Conclusion: Eye movement abnormalities, especially pursuit and saccadic dysfunction, are common in CNS demyelinating diseases with various specific characteristics. Nystagmus is also linked to early detection and correlates with the number of attacks and functional outcomes.

Adherence to Continuous Positive Airway Pressure (CPAP) for Treatment of Obstructive Sleep Apnea (OSA) in Individuals with Cognitive Decline: A Retrospective Cohort Study

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Abstract

Introduction: Obstructive Sleep Apnea (OSA) is a common condition associated with significant health complications, with Continuous Positive Airway Pressure (CPAP) therapy as the primary treatment. However, adherence to CPAP remains a challenge, particularly in elderly patients with cognitive decline.

Objectives: This study aimed to assess CPAP adherence and residual apnea-hypopnea index (AHI) in patients with normal cognitive function versus cognitive decline and to explore the impact of demographic factors and comorbidities on adherence.

Materials and Methods: A retrospective cohort study included 64 OSA patients undergoing CPAP therapy between June 2022 and March 2022. Patients were grouped based on Montreal Cognitive Assessment (MoCA) scores (normal: ≥25; cognitive decline: <25). CPAP adherence (≥4 hours/night or ≥70% of nights) and residual AHI were compared at the initial and 3–6 months follow-up.

Results: At the initial follow-up, patients with normal cognition had significantly higher adherence for ≥4 hours/night (87.5% vs. 65.6%, p = 0.039). No significant differences were observed in residual AHI < 5 (p = 0.756) or adherence for ≥70% of nights (p = 0.095). At 3–6 months, adherence and residual AHI outcomes were similar between groups. Education level influenced early adherence (p = 0.029), but multivariate analysis showed no independent effect. Comorbidities, including diabetes, hypertension, and dyslipidemia, had no significant impact on adherence

Conclusion: Cognitive function and education level influence early CPAP adherence, while long-term adherence appears unaffected. Targeted interventions are necessary to support adherence, particularly in cognitively impaired populations, to optimize OSA treatment outcomes.

Comparison of Whole-body Muscle Imaging Findings between GNE Myopathy and Other Young Adult-onset Hereditary Myopathies

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Abstract

Introduction: GNE myopathy is a rare young adult-onset autosomal recessive hereditary myopathy which gradually progressed with the distal leg's onset. The diagnostic pearls to differentiate GNE myopathy from other young adult-onset. hereditary myopathies could not rely solely on clinical features, but MRI offers additional benefits.

Objectives: This retrospective neuromuscular clinic registry-based cohort aimed to differentiate the whole-body muscles MRI between GNE myopathy and other young adult-onset hereditary myopathies.

Materials and Methods: The fatty tissue replacement was evaluated by 5-sclae system in T1W and proton density fat fraction in DIXON, and the inflammation was evaluated by STIR images. The data was illustrated by heat map for the GNE myopathy group and was compared between two groups with the statistically significant p-value of 0.05.

Results: The prominent fatty tissue replacement in specific muscles with subtle active inflammation in GNE myopathy. The quadriceps and latissimus dorsi were spared in the advanced stage. The tongue muscle was mildly affected in all stage of the disease. There were potential distinctive muscles in GNE myopathy, which are different from other young adult-onset hereditary myopathy, including lumbar extensor, psoas, gluteus minimus, adductor longus, abdominal belt muscle, gastrocnemius medialis, soleus, tibialis anterior, tibialis posterior and the flexor digitorum longus.

Conclusion: This comparative study of the whole-body MRI between GNE myopathy and other young adult-onset hereditary myopathy found the novel findings. Apart from the quadriceps sparing concept in GNE myopathy, we also found Latissimus dorsi sparing even in the advance stage of the disease.

Comparative Proteomic Analysis of Astrocytoma Tissues from Patients with and without Seizures

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Abstract

Introduction: Astrocytoma is a common type of glioma and a frequent cause of brain tumour-related epilepsy. Although the link between glioma and epilepsy is well established, the precise mechanisms underlying epileptogenesis in astrocytoma remain poorly understood.

Objectives: Evaluate the differences in protein expression between patients with astrocytomas who do and do not experience seizures.

Methods: Proteomic analysis of astrocytoma tissue from patients with and without seizures was performed by using mass spectrometry-based techniques.

Results: We detected 131 differentially expressed proteins (42 upregulated and 89 downregulated). Proteins upregulated in patients with seizures were mostly related to an increase in energy metabolism. Proteins downregulated in patients with seizures included those involved in trans-synaptic signalling and gamma-aminobutyric acid synaptic transmission. Interestingly, comparison of protein expression profiles from our cohort with those from a previous study of patients with epilepsy due to other causes showed that the collapsin response mediator protein family of axonal growth regulators was highly expressed only in patients with seizures due to astrocytomas.

Conclusions: Proteomic analysis revealed distinct molecular signatures in astrocytoma patients with epilepsy, mainly by upregulation of energy metabolism pathways and downregulation of inhibitory neurotransmission, suggesting potential therapeutic value in GABAergic enhancement drug. The CMRP-related pathways represent the most likely pathophysiological cause of epilepsy only in patients with astrocytoma. Further studies of the proteins identified here are required to determine their potential as biomarkers and therapeutic targets.

Factors Associated with Acute Symptomatic Seizure Occurrence Among Patients with Posterior Reversible Encephalopathy Syndrome

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Abstract

Introduction: Seizures occur in 66%–81% of PRES patients, often presenting as self-limited seizure; however, some patients develop repetitive seizures or status epilepticus.

Objectives: To define the factors associated with acute symptomatic seizure of PRES patient in Thai population.

Methods: This retrospective cohort study enrolled PRES patients admitted to the Songklanagarind hospital between 2006 and 2019. Seizure characteristics, baseline characteristics, clinical presentations, precipitating factors, neuroimaging characteristics were compared between the seizure and non-seizure groups. Factors with p-value <0.05 in the univariate analysis were entered into the multivariate logistic regression analysis to determine the factors associated with seizure occurrence.

Results: Among 136 PRES patients, acute symptomatic seizures occurred in 50%, with 98.5% occurring within 14 days, predominantly at presentation (82.4%) as single convulsive seizures (55.9%). In univariate analysis, the seizure group had a higher prevalence of Glasgow coma scale score of 0–13, preeclampsia, autoimmune and frontal lesions than the non-seizure group. In contrast, the seizure group had a lower prevalence of headache. In the multivariate logistic regression analysis, the acute symptomatic seizure occurrence directly associated with preeclampsia (adjusted odds ratio (aOR) 6.426, 95% confidence interval (CI) 1.450–27.031, p = 0.016) and autoimmune disease (aOR 4.962, 95% CI 1.283– 18.642, p = 0.025), while headache showed a reverse association (aOR 0.310, 95% CI = 0.158– 0.721, p = 0.008).

Conclusion: Acute symptomatic seizure occurred in a half of patients with PRES in this cohort. Preeclampsia and autoimmune disease were directly associated with seizure occurrence, while headache showed a reverse association.

Predictive Factors for Developing Epilepsy after Auto immune Encephalitis in Neurological Institute of Thailand

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Abstract

Background: Autoimmune encephalitis (AE) is a group of conditions that occur when the immune system mistakenly attacks brain cells, causing swelling and a variety of symptom, including seizure. Post-autoimmune encephalitis epilepsy (PAEE) is defined as having at least one unprovoked seizure that occurs at least 6 months after the resolution of AE and within one year of the onset of AE. Nevertheless, the risk factor of develop PAEE remain unclear.

Objective: To identify risk factors associated with development of PAEE and associated outcome at 6 month follow up.

Methods: A retrospective cohort study of adult patients diagnosed with AIE between 1st May 2018 and 31st May 2024 at The Neurological Institute of Thailand. Baseline characteristic, laboratory results, treatment regimens and outcomes were collected. We divided the patient to PAEE group and non-PAEE group. Comparison between groups using the Chi-square test and Fisher's exact test. Data analysis using SPSS for window, version 17.0

Results: Of 65 AE patients, 8 develops PAEE with median age of 34.5 years [IQR,29.25-54.5], the early seizure present was 100% (8 of 8) and 75% (6 of 8) were treated with IVMP + second line therapy compare to 26 year [20-59], 61.4% (35 of 57), 12.3 % (7 of 57) in non PAEE group respectively. The treatment with IVMP alone increased risk of PAEE (OR 19.047, [2.35-154.56], p=0.006). The poor prognosis outcome associated with nosocomial infection and absence of maintenance immunotherapy.

Conclusion: The treatment with IVMP without second line drug is the predictive factor of development of PAEE in Thai population.

Clinical Outcomes of Mechanical Thrombectomy between Computed Tomography Perfusion versus Non-contrast Computed Tomography Selection in Patients with Anterior Circulation Large Vessel Occlusion at Neurological Institute of Thailand

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Abstract

Background : A previous study compared the benefits of CT perfusion (CTP), MRI, and non-contrasted CT (NCCT) in large vessel occlusion (LVO) in anterior circulation cerebral ischemia but did not show a significant benefit of CTP over NCCT.

Method : We conducted a single-center, bi-directional cohort study by reviewing medical records using a database from the Neurological Institution of Thailand to identify the functional outcomes and complications of acute anterior circulation LVO stroke patients who received mechanical thrombectomy (MT) selected by NCCT with CT angiogram (CTA) and CTP. Our primary outcome is the functional independent defined as mRS 0-2 at 90 days after MT.

Result : 304 patients were included with 245 patients underwent NCCT + CTA selection and 59 patients undergone CTP selection before MT. After adjustment for confounder, there was no difference in 90 days functional independent (mRS 0-2) between patient selection with NCCT + CTA and CTP (NCCT + CTA 55.1% vs CTP 62.7%, adjusted odd ratio [aOR] 1.37[0.74 – 2.52]). There was significantly high asymptomatic intracerebral hemorrhage in CTP group compared with NCCT + CTA group (NCCT + CTA 35.1% vs CTP 67.8%, aOR 1.87[1.02 – 3.42]). However, no significant difference in symptomatic intracerebral hemorrhage between two groups (NCCT + CTA 13.5% vs CTP 13.6%, aOR 1.40[0.59 – 3.34])

Conclusion : In patients with anterior circulation LVO undergoing MT selection by NCCT + CTA yielded no significant different in clinical outcome and safety outcomes compared with CT perfusion study.

Predictor Outcome in Cryptogenic New-onset Refractory Status Epilepticus

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Abstract

Introduction: New-onset refractory status epilepticus (NORSE) occurs in patients without prior epilepsy or relevant neurological conditions, characterized by refractory status epilepticus without a clear cause upon initial evaluation. Cryptogenic NORSE is diagnosed when no cause is identified after extensive evaluation. This study investigates prognostic factors and long-term outcomes in cryptogenic NORSE patients treated at the Neurological Institute of Thailand.

Objectives: To compare clinical and demographic variables between patients with favorable (mRS < 3) and unfavorable (mRS ≥ 3) outcomes at 12 months post-onset and identify factors influencing treatment efficacy.

Materials and Methods: A retrospective cohort study using medical records from June 1, 2016, to October 15, 2023. Patients were classified as cryptogenic NORSE based on inclusion and exclusion criteria. Clinical and demographic variables and treatment outcomes were assessed through medical records and telephone interviews. Statistical analysis was performed using SPSS.

Results: Out of 153 patients with status epilepticus, 20 met the criteria for cryptogenic NORSE. Nine patients (45%) had favorable outcomes (mRS < 3), and 11 (55%) had unfavorable outcomes (mRS ≥ 3). Lower CSF white blood cell count (unfavorable group median 3.0 cells/cu.mm compared to favorable group median 8.0 cells/cu.mm, p = 0.023) and higher anesthetic drug use (unfavorable group median 3.0 compared to favorable group median 1.0, p = 0.006) were significant predictors of poor outcomes. Mortality was 30% (6/20), primarily due to infections, with survivors (14/20) experiencing epilepsy (100%), memory impairment (71%), and psychiatric issues (21%).

Conclusion: Cryptogenic NORSE is associated with high morbidity and mortality. However, approximately 50% of patients may achieve a favorable functional outcome. Factors associated with poor prognosis include lower CSF white blood cell counts and a higher number of anesthetic agents used.

Clinical Characteristics and Treatment Outcomes in Myasthenia Gravis (MG) focusing on Antibodies Status at Neurological Institute of Thailand.

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Abstract

Background: Myasthenia gravis (MG) is an autoimmune disorder that affects neuromuscular transmission, leading to muscle weakness and fatigue. Most cases of MG involve antibodies targeting acetylcholine receptors (AChR), but some cases involve antibodies against muscle-specific kinase (MuSK). This study aims to explore the clinical characteristics and treatment outcomes of patients with anti-MUSK MG and compare them with anti- AChR MG and seronegative MG cases.

Methods: A retrospective descriptive observational study was conducted by reviewing the medical records of MG patients from January 1st, 2016, to September 30th, 2023. Patients were categorized into AChR-positive, MuSK-positive, and seronegative MG (SNMG) groups. Descriptive and comparative statistics were used to analyze clinical symptoms, and treatment outcomes at 12 months post-treatment

Results: Eighty-six patients were included in the study: 73 were AChR-positive, 9 were MuSK-positive, and 4 were SNMG. Most patients were female. MuSK-positive cases exhibited more severe respiratory involvement and a higher risk of crisis, whereas AChR-positive patients displayed a broader range of symptoms. SNMG was characterized by ptosis and fatigue. Remission occurred in 22.2% of MuSK-positive patients treated with rituximab, but none in AChR-positive or SNMG cases. At 12 months, improvement was observed in 77.8% of MuSK, 68.5% of AChR, and 100% of SNMG patients. Worsening was more frequent in MuSK-positive cases (22.2% at 12 months).

Conclusion: MuSK-positive MG showed better outcomes with rituximab, achieving remission in some cases, while AChR-positive and SNMG patients had no remission. SNMG demonstrated the most favorable improvement rates. Tailored, subtype-specific treatments are essential to optimize outcomes and manage severe symptoms, particularly in MuSK-positive MG.

Characteristic of Clinical Presentation and Treatment Responsiveness of Nodal/paranodal Neuropathy Compared with Seronegative Chronic Inflammatory Demyelinating Polyradiculoneuropathy (CIDP)

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Abstract

Introduction: Nodal/paranodal neuropathy is an autoimmune disorder targeting nodal or paranodal proteins, including NF155, CNTN1, and CASPR1, which are essential for maintaining proper nerve conduction. While its symptoms resemble those of CIDP, nodal/paranodal neuropathy presents unique diagnostic and therapeutic challenges. This study addresses the lack of research on this condition in Thai patients by exploring its clinical features, diagnostic hurdles, and treatment outcomes in this population.

Objective: This study aims to compare the clinical characteristics, laboratory findings, and treatment responsiveness of nodal/paranodal neuropathy with those of seronegative Chronic Inflammatory Demyelinating Polyneuropathy (CIDP).

Materials and Methods: This case-control study analyzes the clinical presentations and treatment responses of patients with nodal/paranodal neuropathy and seronegative CIDP. Data were collected at baseline and during follow-ups at 1, 3, and 6 months to evaluate treatment outcomes and disease progression.

Results: Sensory ataxia was more prevalent in the nodal/paranodal neuropathy group compared to the seronegative CIDP group. Both groups demonstrated similar responses to steroids, with or without immunosuppressive drugs, but nodal/paranodal neuropathy did not respond to IVIg treatment.

Conclusion: Sensory ataxia is a distinguishing feature of nodal/paranodal neuropathy. While steroids and rituximab are effective treatment options, IVIg is ineffective in managing this condition.

Cardiac Autonomic Dysfunction in Patients with Multiple System Atrophy and Spinocerebellar Ataxia: A Comparative Study and Distinctive Machine Learning Model

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Abstract

Introduction: Cardiac autonomic function assessment in multiple system atrophy-cerebellar subtype (MSA-C) and spinocerebellar ataxia (SCA) using heart rate variability (HRV) during both at rest and deep breathing (DB) has been rarely systematically studied. Also, none has used machine learning (ML) process to construct the distinctive model to help differentiate these conditions.

Objective: To assess the differences of HRV parameters between MSA-C and SCA and their age-matched normal controls and also to use the supervised ML to construct the distinctive model.

Methods: Patients with either MSA-C or SCA, along with their respective 1:1 age- matched normal controls were recruited from the Neurological Institute of Thailand (NIT) during Dec 2023 to Jun 2024. Recording with Polar® H10 chest strap, 5-minute each during at rest and DB, was performed in all participants. Time and frequency domain HRV parameters were compared between the diseases and their controls, and also between the two disease conditions. ML with different methods was then employed to find best distinctive model.

Results: Forty-four patients including 22 MSA-C and 22 SCA, and 44 normal controls were included for analysis. Most HRV parameters in both MSA-C and SCA were significantly lower than controls. Percentage change of the HRV values during DB as compared with at rest was comparable between SCA and their controls, but significantly different for MSA-C. Top-performing model was constructed with a recall (sensitivity) of 0.94, 0.88 and 0.86 for controls, MSA-C and SCA, respectively. Corresponding precision (positive predictive value) was 1.00, 0.88 and 0.75 and F1 score was 0.97, 0.88 and 0.80, respectively.

Conclusion: Cardiac autonomic functions, both sympathetic and parasympathetic systems, were impaired in MSA-C and SCA, more pronounced in MSA-C. Baseline HRV at rest disclosed a preferential parasympathetic loss in SCA, whereas a less efficient sympathetic activity was demonstrated during DB in MSA-C. Distinctive model using HRV data is promising but required further valid

Comparison of Visual Outcomes in Patients with AQP4-IgG Positive, MOG-IgG Positive, and Double Seronegative Optic Neuritis after Severe Optic Neuritis

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Abstract

Objectives: To compare longitudinal visual outcomes in patients with severe visual impairment due to optic neuritis who are positive for Aquaporin-4 immunoglobulin G (AQP4-IgG), Myelin oligodendrocyte glycoprotein-immunoglobulin G (MOG-IgG), or are double seronegative.

Introduction: Optic neuritis often has an idiopathic origin, yet clinical data on idiopathic autoimmune-mediated optic neuritis remains sparse. Previous studies have predominantly focused on visual acuity at specific post-treatment time points, lacking longitudinal comparisons.

Material and Methods: We conducted a retrospective longitudinal study at the Neurological Institute of Thailand, analyzing visual outcomes in three patient subtypes presenting with severe visual impairment (defined as best corrected visual acuity [BCVA] of 20/200 or worse) between June 2020 and May 2023. Visual outcomes were assessed based on time to achieve good visual recovery (defined as ≥66.66% improvement in BCVA from after the attack to baseline) and complete visual recovery (defined as BCVA returning to baseline).

Results: A total of 30 patients with 45 affected eyes were included. Individual eyes were analyzed independently including AQP4-IgG (n=10), MOG-IgG (n=5), and double seronegative (n=30). Demographic data revealed a predominantly female population with a median age of 39 years old, with the first episode of optic neuritis. The median BCVA at nadir was 1.7 (logMAR). Using MOG-IgG as a comparator, hazard ratios for complete visual recovery were 0.158 (P=0.135) for the AQP4-IgG subtype and 0.421 (P=0.288) for the double seronegative subtype. Regarding good visual recovery, the hazard ratios for the AQP4-IgG subtype and double seronegative subtype were 0.187 (P=0.013) and 0.189 (P=0.005), respectively, compared to the MOG-IgG subtype. Notably, all MOG-IgG cases achieved good visual recovery, compared to less than 50% of AQP4-IgG and double seronegative subtype.

Conclusion: Most cases of non-multiple sclerosis (non-MS) optic neuritis demonstrated recovery within three months. The MOG-IgG subtype exhibited the most favorable visual prognosis, and the shortest recovery time compared to the AQP4-IgG subtype and the double seronegative subtype.

Clinical Feature and Treatment Outcomes of Necrotizing Autoimmune Myopathy in Neurological Institute of Thailand

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Abstract

Background: Necrotizing autoimmune myopathy (NAM) is a rare and severe subtype of idiopathic inflammatory myopathies (IIM), characterized by muscle necrosis, profound weakness, and elevated serum CK levels. NAM is classified into three subtypes: anti-signal recognition particle (anti-SRP) associated NAM, anti-3-hydroxy-3-methylglutaryl-coenzyme A reductase (anti-HMGCR) associated NAM, and seronegative NAM. Anti-SRP associated and seronegative NAM are associated with severe proximal muscle weakness and systemic complication such as cardiac and respiratory involvement, whereas anti-HMGCR associated NAM, often associated to statin use and better outcomes.

Objective: To evaluate and compare baseline characteristics, clinical progression, and treatment outcomes among NAM subtypes.

Methods: This retrospective study included NAM patients treated at the Neurological Institute of Thailand during 2019 - 2024. Patients were grouped by antibody profiles. Data collected included demographic details, CK levels, muscle strength, treatments, and functional outcomes assessed using the Modified Rankin Scale over 12 months.

Results: Among 29 patients, 20 people (68.97%) had anti-SRP associated NAM, 8 people (27.59%) were anti-HMGCR positive, while only 1 patient (3.45%) were seronegative. Cardiac involvement (as defined by elevated Tn-T and abnormal EKG) and respiratory failure occurred in two anti-SRP patients. By 6 months, CK levels decreased across all subtypes, with anti-HMGCR patients showing better functional recovery (mRS ≤ 2). By 12 months, most anti-HMGCR patients achieved near-complete functional recovery (mRS ≤ 1), whereas anti-SRP patients and seronegative NAM patients exhibited residual limitations. Favorable responses were observed in refractory cases who received rituximab.

Conclusion: Patients with anti-HMGCR associated NAM demonstrated better recovery base on mRS, while patients with anti-SRP and seronegative NAM had more severe clinical course. Cardiac and respiratory involvement was observed in anti-SRP NAM. Rituximab showed efficacy in refractory cases, highlighting its role as an effective treatment option in severe NAM.

Characteristics and Factors that Predict Alzheimer's Disease of Early-onset Dementia in Neurological Institute of Thailand

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Abstract

Introduction: Early-onset dementia (EOD), occurring in individuals under 65, is a growing public health concern. In Thailand, data on EOD, particularly distinguishing Alzheimer's disease (AD) from non-AD dementia subtypes, are limited. This study aimed to investigate EOD's prevalence, characteristics, and associated factors at the Neurological Institute of Thailand.

Materials and Methods: A retrospective study was conducted on patients diagnosed with dementia before age 65 between 2018 and 2022. Data collection included demographic data, comorbidities, cognitive assessments (TMSE, MOCA), neuroimaging (MTA scores,Fazekas scale), and lab results. Statistical comparisons were made between AD and non-AD groups.

Results: Among 199 patients, AD was the most common form of dementia (54.7%). The AD group had fewer males (43.2% vs. 63%, $p = 0.006$) and a higher median age of onset (58 vs. 54 years, $p = 0.005$). Memory and attention impairments were more impaired in AD ($p < 0.001$). MTA scores were higher in AD, and Fazekas scores in non-AD groups ($p < 0.001$).

Conclusion: Early-onset AD is the most common EOD in this study, while non-AD dementias, particularly vascular dementia, are linked to more vascular risk factors. Early diagnosis and management of these factors are essential for improving outcomes.