MALAYSIA STROKE CONFERENCE 2025

Abstract Book

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OP_C_01

Oral Clinical

ADHERENCE WITH ABC BUNDLE OF CARE FOR SPONTANEOUS INTRACEREBRAL BLEED IN RHH: A CLINICAL AUDIT

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Introduction:
Intracerebral haemorrhage (ICH) accounts for 10-15% of all strokes and carries the worst prognosis, with a one-year fatality rate of 38%. The ABC care bundle, initially implemented at Salford Royal Hospital, reduced 30-day case fatalities by 44%. Expanding the bundle to Stockport and Bury NHS Trusts resulted in a similar mortality reduction (34.3% to 26.8%). This audit aims to evaluate the impact of implementing the ABC bundle at Russell's Hall Hospital to reduce mortality and improve patient.
care.

Objective:
The objective of this audit is to assess the adherence to the ABC bundle of care for patients admitted with spontaneous ICH to the Stroke Unit at Russell's Hall Hospital.

Method:
A retrospective audit was conducted on patients admitted to the C8 Stroke Unit with spontaneous ICH from 01/01/2023 to 30/04/2024. The ABC bundle includes:

A: Rapid anticoagulant reversal within 90 minutes.

B: Intensive blood pressure (BP) control to a target of 130-140 mmHg within 60 minutes (or <180 mmHg for late arrivals).

C: Urgent neurosurgical referral for patients with mRS ≤2 and specific clinical criteria.

Results:

Anticoagulation Reversal: 12% (6/37) of patients were on anticoagulants. None received reversal within the 90-minute target (range: 02:20–08:00 hours).

Blood Pressure Control: 54% (20/37) had SBP >150 mmHg on admission. Of the 14 eligible patients for rapid BP reduction, none achieved the target SBP of 140 mmHg within 60 minutes.

Neurosurgical Referral: 84% (31/37) had mRS ≤2, and all were referred according to protocol.

Conclusion:
While neurosurgical referrals were successfully implemented, delays in anticoagulation reversal and limited BP control indicate areas for improvement. Further training and enhanced monitoring are essential to optimize outcomes.

OP_C_02

Oral Clinical

PREDICTIVE VALUE OF FLAIR HYPERINTENSE VESSELS SIGN FOR LARGE VESSEL OCCLUSION IN HYPERACUTE STROKE

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Background And Objective:
Early identification of Large Vessel Occlusion (LVO) in hyperacute stroke is crucial for timely intervention. This study investigates the predictive value of Fluid-Attenuated Inversion Recovery (FLAIR) Hyperintense Vessels Sign (FHVS) for LVO in hyperacute stroke patients.

Methods:
A retrospective cohort study was conducted at Hospital Pengajar Universiti Putra Malaysia, analyzing data from 102 patients with hyperacute stroke who underwent MRI within 6 hours of symptom onset between May 2020 and January 2025. FHVS presence on FLAIR imaging was correlated with LVO confirmed by subsequent vascular imaging.

Results:
FHVS was present in 48 of 50 cases with confirmed LVO. The sensitivity of FHVS for predicting LVO was 96%, with a specificity of 100%. Multinomial logistic regression indicated a strong correlation between FHVS and severe stenosis in the M1 segment of the middle cerebral artery.

Conclusion:
FHVS demonstrates high sensitivity as a predictor of LVO in hyperacute stroke, supporting its potential as a valuable non-invasive screening tool for early LVO detection.
Keywords: Large Vessel Occlusion, Fluid-Attenuated Inversion Recovery, Flair Hyperintense Vessels Sign

OP_C_03

Oral

Clinical

AI-ASSISTED DETECTION OF HYPERINTENSE VESSEL SIGN ON FLAIR MRI: A NOVEL TRIAGE TOOL FOR ACUTE ISCHEMIC STROKE MANAGEMENT

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Introduction:
The Hyperintense Vessel Sign (HVS) on FLAIR MRI is a subtle yet critical marker of arterial occlusion in acute ischemic stroke. Its timely detection can influence decisions regarding thrombolysis or thrombectomy eligibility. However, manual HVS identification is time-intensive and prone to inter-observer variability, especially in high-pressure emergency settings. We present a novel deep learning-based triage tool designed to assist radiologists by automating HVS detection with high computational efficiency and clinical reliability.

Methods:
A total of 300 FLAIR MRI datasets were retrospectively collected from Hospital Sultan Abdul Aziz Shah (HSAAS), UPM, obtained using a standardized protocol on a 3T scanner. A deep learning model based on the nnU-Net architecture was developed to detect HVS with pixel-level precision. The model was trained using 5-fold cross-validation and tested against annotations by three board-certified neuroradiologists (gold standard). Novel features included the integration of explainable AI (XAI) techniques to enhance model transparency and improve radiologist trust in AI outputs.

Results:
The model achieved a sensitivity of 89%, specificity of 84%, and Dice score of 0.78 ± 0.11 compared to radiologists' consensus annotations (accuracy: 95%). While radiologists outperformed the model diagnostically, the tool reduced average triage decision time by 40%, prioritizing high-risk cases for review without compromising safety. Importantly, XAI visualizations provided interpretable heatmaps highlighting regions of interest, which radiologists reported as valuable for cross-verification during time-critical scenarios.

Conclusion:
This study introduces a novel AI-powered triage tool that combines rapid HVS detection with explainability features to support radiologists in acute ischemic stroke care. By reducing decision-making time while maintaining diagnostic accuracy, this approach has the potential to transform stroke workflows in resource-limited or high-volume settings. Future work will focus on integrating this tool into real-time clinical pipelines and expanding its application to multi-modal imaging data for comprehensive stroke assessment.

OP_C_04

Oral

Clinical

ISCHEMIC STROKE AND CYP2C19 GENETIC RESISTANCE

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Introduction:
Recurrent ischemic stroke poses a significant risk for long-term disability and mortality. Antiplatelet therapy is essential in secondary prevention, with clopidogrel being commonly used. However, genetic variations, particularly *CYP2C19* polymorphisms, may reduce clopidogrel efficacy, especially in Southeast Asian populations.

Objectives:
To highlight the clinical implications of *CYP2C19* genetic polymorphisms in antiplatelet therapy for secondary stroke prevention and demonstrate the potential benefit of ticagrelor in affected individuals.

Methods:
We report the case of an 80-year-old Cambodian male admitted in January 2024 with slurred speech, facial droop, and right-sided weakness. MRI showed mild stenosis of the left middle cerebral artery (M1). The patient was treated with aspirin, clopidogrel, statins, and losartan, with gradual recovery (mRS 1). In May 2024, he suffered a recurrent stroke with similar symptoms. Genetic testing revealed *CYP2C19* intermediate metabolizer status.

Results:
Repeat MRI showed occlusion of the left MCA (M1) and left hemispheric infarction. The patient was switched to ticagrelor, rosuvastatin-ezetimibe, and continued losartan. After 8 months, follow-up MRI showed revascularization of the MCA with only mild residual stenosis.

Conclusion:
In patients with *CYP2C19* polymorphisms, clopidogrel metabolism is impaired, leading to suboptimal platelet inhibition and increased risk of recurrent stroke. Genetic testing can guide personalized antiplatelet therapy. Ticagrelor offers a superior alteative unaffected by *CYP2C19* status, and may significantly improve outcomes in this population.

OP_C_05

Oral Clinical

EVALUATION OF TREATMENT OUTCOMES OF LOW-DOSE INTRAVENOUS THROMBOLYSIS IN PATIENTS WITH NON-LARGE VESSEL OCLUSION

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Intravenous regenerative tissue plasminogen activator (rtPA) within the first three-hour window, an additional 13% of anti-ischemic patients had complete or near-complete recovery of neurological function at three months. Currently, 4.5-hour intravenous thrombolysis and rtPA alone (Alteplase 0.6mg/kg) provide compatible results and the opposite tendency to reduce blood changes. standard.

Objective:
Evaluate the results of intravenous thrombolytic therapy in patients with anemia without large vessel occlusion and find out related factors.

Research Subjects And Methods:
All patients with acute cerebral infarction without major artery occlusion at S.I.S Can Tho Inteational General Hospital during the study sampling period who simultaneously met the sampling criteria and did not violate the exclusion criteria through direct sampling of cases and retrospective medical records from October 2022 to October 2024.

Results:
At the time of admission, mean NIHSS: 9.8 ± 4.4 . At the time of discharge or after 7 days of treatment, the mean NIHSS score improved: 3.8 ± 3.4. The average mRS score at admission was 3.3 ± 0.7 and after 3 months the average mRS score was 1.1 ± 1.0. mRS score after 3 months decreased by more than 2 points compared to when hospitalized. Among the rTPA treatment cases, there was 1 case of asymptomatic cerebral hemorrhage. On the other hand, Glasgow ≤ 12, high NIHSS (above 15), high mRS (4-5) were strongly associated with por recovery with statistically significant differences.

***Keywords**: Cerebral infarction, MRI 3 Tesla, S.I.S Hospital*

OP_C_06

Oral

Clinical

STRENGTHENING STROKE RECOVERY THROUGH COMMUNITY-BASED CARE: A MULTIDISCIPLINARY APPROACH FOR THE ELDERLY IN SOUTHERN MALAYSIA

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Introduction:
Stroke remains a major cause of long-term disability among older adults in Malaysia. Many elderly survivors are discharged with residual functional impairments and limited access to rehabilitation, especially in non-urban settings.

Objectives:
This study evaluates a pilot community-based stroke care model implemented in two districts in Johor, Malaysia; to support functional recovery and caregiver preparedness through multidisciplinary collaboration.

Methodology:
Seventy-eight elderly post-stroke patients (≥60 years) were recruited from all public health clinics in the Kluang and Batu Pahat districts and enrolled in a 3-month program. Interventions included physiotherapy and occupational therapy home visits, medication reviews, basic caregiver education, and home safety assessments. Functional status was assessed using the Modified Barthel Index (MBI), and caregiver strain was measured using the Zarith Burden Interview (ZBI) at baseline and post-intervention.

Results:
Of the 78 patients enrolled, 61 (78%) completed the intervention. The mean MBI score increased modestly from 45.8 to 55.6, with incremental gains in self-care, mobility, and toileting functions. Approximately 42% of participants showed improvement in at least two basic ADLs. Caregiver burden scores decreased slightly, with qualitative feedback suggesting improved coping but persistent challenges. Environmental risk assessments identified safety issues in 22 homes, mainly related to fall prevention. Public education sessions reached 1,000 individuals, raising awareness of stroke recovery needs and community support options.

Conclusion:
While modest in impact, this community-based model shows promise in enhancing functional outcomes and caregiver engagement among elderly stroke survivors. It highlights the potential role of primary care and home-based interventions in supporting stroke recovery in resource-limited settings.

Keywords: *Community-based*, Stoke, elderly, public health, community health

OP_C_07

Oral Clinical

REAL-TIME RESCUE: EMERGENCY LARGE VESSEL STENTING FOR ATHEROSCLEROTIC STROKE- A NEUROLOGY-IR COLLABORATIVE CASE SERIES

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Introduction:
Acute ischemic stroke due to large vessel occlusion may result from tandem occlusions or severe atherosclerotic stenosis of ICA/MCA. While EVT remains the cornerstone of treatment, emergency stenting may be necessary in select cases to restore and maintain cerebral perfusion.

Objective:
To evaluate the real-world application and outcomes of emergency ICA/MCA stenting in atherosclerotic stroke, focusing on neurologic recovery, haemorrhagic risk, and procedural decision-making.

Methods:
Retrospective study of 16 patients who underwent emergency ICA/MCA stenting for acute large vessel occlusion at our centre between 2022 and April 2025. Data were retrieved from PadiMedical. Descriptive and univariate analyses were performed using DATAtab, with 1-year mRS as the primary outcome.

Results:
Successful revascularization (TICI 2b–3) was achieved in 50% of cases. Symptomatic intracranial hemorrhage (HI2) occurred in 25%. Early outcomes were modest, with a median mRS of 4 at discharge and at 3 months. Among the 10 patients with 1-year follow-up, 60% achieved good functional outcome (mRS 0–2).
Exploratory univariate analysis suggested that younger age, higher DWI-ASPECTS, shorter onset-to-EVT time, and intravenous thrombolysis were associated with favourable outcomes, though none reached statistical significance due to small sample size.

Conclusion:
Emergency stenting may be a feasible rescue strategy in select cases of atherosclerotic or tandem occlusion-related LVO. Trends toward better outcomes in patients with early reperfusion and smaller infarct burden may help guide future patient selection. Larger prospective studies are needed to validate these findings.

OP_C_08

Oral Clinical

RED FLAGS OR FALSE ALARM: A RETROSPECTIVE ANALYSIS, EVALUATING THE DIAGNOSTIC ACCURACY AND BURDEN OF OVERACTIVATION FOR DIZZINESS IN POSTERIOR CIRCULATION STROKE - A 5 YEAR EXPERIENCE AT HOSPITAL SULTAN ABDUL AZIZ SHAH

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Introduction:
Dizziness is a common presenting symptom in emergency care and is frequently associated with posterior circulation strokes (POCI). Due to the high-risk nature of missed POCI diagnoses, stroke code activations are often triggered in patients presenting with dizziness alone. However, this nonspecific symptom can lead to overactivation of stroke pathways, placing strain on diagnostic resources and clinical personnel.

Objectives:
This study aims to assess the diagnostic accuracy of dizziness-initiated stroke code activations and evaluate the operational burden they impose on acute stroke services over a five-year period.

Methods:
A retrospective review was conducted on 295 stroke code activations initiated for dizziness between 2020 and 2025 at Hospital Sultan Abdul Aziz Shah. Data were collected on demographic factors, stroke code, MRI findings, intervention outcomes, and referral sources. Stroke codes were classified by outcome: acute ischemic stroke, posterior TIA, hemorrhage, tumor, or peripheral causes. Each activation was estimated to consume one man-hour of clinical resources.

Results:
Dizziness-related activations accounted for 13.6% of all 2,170 stroke referrals. Only 36.6% (108 patients) were confirmed strokes, including acute ischemic strokes (29.83%, 88 patients), TIAs (5.08%, 15 patients), and hemorrhages (1.69%, 5 patients). The remaining 63.4% (187 patients) were non-stroke cases, mostly peripheral causes (61.69%) or tumors (1.61%). Despite high activation rates, 21% Code Red and 50.8% Code Yellow, intervention was rare; only 11 patients received thrombolysis and 1 underwent thrombectomy. Most patients were walk-ins (73.2%). These 295 cases translated into 295 man-hours, with nearly two-thirds not yielding actionable diagnoses, highlighting a disproportionate burden on stroke teams.

Conclusion:
Dizziness-triggered stroke codes result in high false-positive rates and substantial resources use. Improving diagnostic accuracy requires enhanced triage protocols, increased clinician training particularly in bedside tools like HINTS and adoption of data-driven algorithms tailored to POCI. These strategies may reduce unnecessary activation while maintaining stroke care quality.

OP_C_09

Oral Clinical

FIFTEEN YEARS OF ACUTE ISCHAEMIC STROKE IN MALAYSIA: PRELIMINARY ANALYSIS OF PATIENT CHARACTERISTICS, TREATMENTS, AND ONE-YEAR OUTCOMES

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Introduction:
This nationwide study aimed to describe the baseline characteristics, treatments, and one-year outcomes of patients with acute ischaemic stroke in Malaysia.

Methods:
We conducted a retrospective cohort study of patients admitted for acute ischaemic stroke between 1 January 2009 and 31 December 2023 across six public hospitals across different regions in Malaysia. Data were obtained from the National Stroke Registry, mortality records from Jabatan Pendaftaran Negara, and hospital admission data from Pusat Informatik Kesihatan. Records were linked using the national registration identification number to obtain one-year mortality and readmission data.

Results:
A total of 14,812 patients were included: Hospital Sultanah Nur Zahirah (n=7,375), Hospital Seberang Jaya (n=3,608), Hospital Umum Sarawak (n=3,127), Hospital Queen Elizabeth I & II (n=642), Hospital Melaka (n=50), and Hospital Kuala Lumpur (n=10). The mean age was 61.9 years (SD 12.6), with 58.2% male and 70.9% Malay. Lacunar stroke was the most common subtype (46.7%). Comorbidities included hypertension (75.2%), diabetes (50.2%), dyslipidaemia (31.8%), ischaemic heart disease (13.5%), atrial fibrillation (10.4%) and active smoking (38.3%). Recurrent stroke was reported in 21.3%. The median NIHSS score on admission was 5 (IQR 2–12). Only 39.4% arrived within 4.5 hours, and 9.5% received thrombolysis. Antiplatelets and anticoagulants were prescribed in 87.0% and 11.4% of cases, respectively. Stroke education (94.7%) and rehabilitation referrals (74.8%) were high. Common complications included pneumonia (17.9%); symptomatic intracerebral haemorrhage was rare (0.2%). In-hospital mortality was 8.7%, with 21.3% discharged with good functional outcome (mRS 0–1). At one year, 24.7% had died, 2.2% experienced recurrent stroke, and 10.6% had a major cardiovascular event.

Conclusion:
This study provides a comprehensive overview of acute ischaemic stroke in Malaysia, with a high burden of vascular risk factors and relatively young age at onset. Improvements are needed in primary preventions, early recognition, timely acute treatment, and long-term care systems.

Oral Presentation:

Non-Clinical

OP_NC_01

Oral Non-Clinical

THE THERAPEUTIC EFFECT OF MICRORNA-155 ANTAGOMIR ON THE CEREBRAL MICROVASCULAR OF TRANSIENT ISCHEMIC STROKE MALE SPRAQUE DAWLEY RATS

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*

Introduction:
MicroRNA-155 (miR-155) is a multifunctional microRNA that is upregulated during cerebral infarction in both animal stroke models and stroke patients. Inhibition of mir-155 results in mitigating inflammation, reducing neuronal damage and protecting cerebral vasculature.

Objectives:
This study aims to investigate the effect of miR-155 antagomir on the neurological functions and cerebral microvasculature of the transient cerebral ischemic rats.

Methods:
Eighteen male Sprague Dawley rats were randomly divided into three groups: miR-155 antagomir (n=6), saline (n=6) and scrambled oligonucleotides (n=6). All rats were subjected to 1 hour of transient middle cerebral artery occlusion (tMCAO). miR-155 antagomir was delivered intrathecally immediately after reperfusion. The modified neurological severity score and grid walking test were assessed, and brain samples were collected 24 hours after the intrathecal injection. Brain samples were subjected for immunohistochemistry and TEM.

Results:
MiR-155 antagomir-treated rats showed lower neurological deficits and significant improvement in both contralateral and ipsilateral foot slips. There is a significant reduction in total infarct volume in the brain of the MiR-155 antagomir-treated rats. Immunohistochemistry staining reveals higher CD31-positive cells in the penumbra area. The ultrastructural cerebral blood capillary of MiR-155 antagomir-treated rats has intact microvascular integrity compared to saline-treated rats.

Conclusion:
miR-155 antagomir improves neurological and motor coordination, reduces brain infarction, supports cerebral vasculature and improves the vascular function of transient ischemic stroke rats. MiR-155 represents a potential therapeutic target for cerebral infarction and microvasculature, however, further research is needed to elucidate the mechanisms involved.

Keywords: microRNA, cerebral infarction, cerebral microvascular, middle cerebral artery occlusion, rat.

E-Poster:

Clinical

EP_C_01

E-Poster Clinical

FACTORS OF STROKE SURVIVORS DEFAULTED STROKE REHABILITATION CLINIC FOLLOW UP IN SIBU HOSPITAL

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Background And Aim:
Stroke survivors requires the continuum of rehabilitation service. This study aims to look into the demographic characteristics of stroke patients that defaulted rehabilitation medicine clinic after discharge in Sibu Hospital. Given Sarawak's wide geographical expanse and its status as the largest state in Malaysia, understanding these factors is crucial to improving follow-up care and optimizing stroke rehabilitation outcomes.

Methods:
A retrospective descriptive study was conducted on inpatient stroke patient referrals for rehabilitation service from 17 February 2022 to 31 December 2024. The information of patient socioeconomic status, stroke severity and functional outcome upon discharge were compiled from the medical records. The data analysis was done using SPSS version 26.

Results:
Among 703 patients, 61% (n=428/703) were from the B40 socioeconomic group. Of the B40 group, 61% (n=341/428) were classified having moderate stroke severity based on NIHSS scores. Within this group, 37% (n=208/341) defaulted on follow-up care, while only 39% (n=133/341) engaged in rehabilitation. Furthermore, 62% (n=392/428) of B40 patients were in severely or totally dependent at discharge, and 39% (n=246/392) of them did not continue follow-up care. In contrast, only 23% (n=146/392) of these patients-maintained rehabilitation. This B40 group demonstrated a notably higher default rate, with 61% (n=260/428) failing to attend follow-up care within one-month post-discharge. Additionally, 50% (n=352/703) of the total patient population was unemployed, with 72% (n=255/352) unemployed were from the B40 group, contributing to 45% (n=159/255) default rate.

Conclusion:
In conclusion, patients from the B40 group and unemployed individuals face higher risks of defaulting on care due to financial and logistical barriers. Greater stroke severity and dependency worsen their ability to adhere to treatment. Addressing socio-economic challenges can improve treatment adherence and long-term recovery outcomes for vulnerable stroke patients.

EP_C_02

E-Poster Clinical

ROLE OF TDCS IN OVERCOMING LEARNED NON-USE TO IMPROVE UPPER LIMB FUNCTION IN STROKE SURVIVORS

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Introduction:
Stroke is a leading cause of long-term disability worldwide, often resulting in motor impairments and functional dependence. Leaed non-use of the paretic upper limb is a common post-stroke behavior, where patients rely heavily on the unaffected limb. This maladaptive patte contributes to abnormal interhemispheric inhibition (IHI) and hinders motor recovery. Transcranial direct current stimulation (tDCS) is a non-invasive neuromodulation technique that can potentially address this imbalance by modulating cortical excitability.

Methods:
We reported the case of a 48-year-old right-handed male with right hemiparesis following a left intracerebral hemorrhage. After intensive rehabilitation, he developed persistent leaed non-use of the right upper limb. The patient received tDCS at 2 mA for 20 minutes, five times per week, with the cathode placed over the unaffected hemisphere (right M1) and the anode over the left supraorbital area (Fp1). Following each session, 90 minutes of task-specific training focused on the right upper limb, including passive stretching and functional activities aiming to enhance cortical excitability and promote motor releaing.

Results:
Post-intervention, the patient demonstrated substantial improvements in upper limb function. The Fugl-Meyer Assessment (FMA) upper extremity score improved from 18/36 to 25/36, with notable gains in wrist and hand function. The total motor score increased from 27/66 to 45/66. Subjectively, the patient showed increased engagement of the right hand in daily activities, incorporating it into about 30% of functional tasks such as eating and grooming.

Conclusion:
This case report illustrates the promising role of tDCS in improving motor function and functional use of the paretic upper limb in stroke survivors with leaed non-use. By reducing interhemispheric imbalance and enhancing cortical plasticity, tDCS may serve as a valuable tool in neurorehabilitation settings.

EP_C_03

E-Poster Clinical

ACUTE SPONTANEOUS SPINAL EPIDURAL HEMATOMA MIMICKING CAROTID DISSECTION IN A PATIENT ON DOAC: A CASE REPORT

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Acute spontaneous spinal epidural hematoma (SSEH) is a rare but serious condition that can mimic stroke or carotid artery dissection, leading to potential misdiagnosis. A 75-year-old male with atrial fibrillation on apixaban presented with sudden right-sided weakness. Initial stroke evaluation, including CT and CT angiogram, was unremarkable. MRI of the cervical spine revealed an epidural hematoma at C3-C5, compressing the spinal cord. Given his improving symptoms, he was managed conservatively, with subsequent MRI showing resolution of the hematoma. This case underscores the importance of considering SSEH in stroke mimics, particularly in anticoagulated patients. Early MRI is crucial for diagnosis and appropriate management. SSEH should be a differential diagnosis in acute neck pain with unilateral weakness, especially in patients on anticoagulation. Prompt recognition can prevent unnecessary interventions and optimize outcomes.

EP_C_04

E-Poster Clinical

CASE SERIES OF STROKE PATIENTS WITH COEXISTING ATRIAL FIBRILLATION AND MALIGNANCY

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Introduction:
Malignancy and atrial fibrillation (AF) are both independent risk factors for ischemic stroke. AF increases the risk of thromboembolic stroke due to impaired atrial contractility, blood stasis in the left atrium, and subsequent embolization to the brain. Malignancy elevates the risk of stroke by releasing procoagulant factors that activate the coagulation cascade, leading to a hypercoagulable state. This case series describes patients who received acute stroke treatment at Kek Lok Si Charitable Hospital between October 2022 and March 2025. Data were extracted from the patients' medical records.

Report:
Case 1
A 68-year-old man with diabetes mellitus, hypertension, and dyslipidemia developed right-sided hemiparesis, which resolved within an hour. He was diagnosed with a transient ischemic attack (TIA). Further workup revealed undiagnosed atrial fibrillation and a right upper lobe lung malignancy (stage T2aN0M0). He was scheduled for surgical resection of the right upper lung lobe.

Case 2
An 80-year-old man with diabetes mellitus, hypertension, and AF (on warfarin) was diagnosed with ascending colon adenocarcinoma and scheduled for hemicolectomy. On day 4 after warfarin cessation, he developed a left posterior circulation stroke. Emergency ileostomy was performed for tumor-related bleeding. Postoperatively, his course was complicated by ileus, rapid AF, delirium, and prolonged ICU admission.

Case 3
A 77-year-old woman newly diagnosed with AF and a stroke developed lower gastrointestinal bleeding two weeks after initiating dabigatran therapy. Colonoscopy and CT imaging revealed a stage IV rectosigmoid tumor. Two weeks after dabigatran discontinuation, she suffered a right middle cerebral artery (MCA) infarct with left hemiparesis (NIHSS score 21). She subsequently developed an obstructing tumor requiring a defunctioning stoma and later experienced scar-related epilepsy.

Conclusion:
AF and malignancy are increasingly coexisting in an aging population. Managing these patients is challenging due to their elevated concurrent risks of both stroke and bleeding.

EP_C_05

E-Poster Clinical

ISCHAEMIC STROKE AND POST-STROKE MEDICAL COMPLICATIONS: A STUDY IN SEBERANG JAYA HOSPITAL, PENANG, MALAYSIA

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Introduction:
Stroke patients are susceptible to multiple medical complications due to underlying comorbidities such as hypertension, diabetes mellitus, cardiovascular diseases, and others. These complications substantially affect patients' final outcomes, hospital length of stay, and long-term recovery. This study aims to investigate the relationship between stroke subtypes and associated medical complications.

Methods:
This retrospective cross-sectional study included ischemic stroke patients treated at Seberang Jaya Hospital from 2023 to 2024. Patients with hemorrhagic stroke or incomplete data were excluded. Data were extracted from medical records and analyzed using SPSS IBM version 26.

Results:
A total of 1,573 ischemic stroke cases from 2023 to 2024 were analyzed. Of these, 64.8% were male and 35.2% female, with a mean age of 59.6 years (SD 13.41). Stroke subtypes included lacunar infarct (LACI, 61.6%), partial anterior circulation infarct (PACI, 14%), posterior circulation infarct (POCI, 10.4%), total anterior circulation infarct (TACI, 13.6%), and transient ischemic attack (TIA, 0.3%).
Complications during admission included: pneumonia (13.9%); acute kidney injury (8.3%); sepsis (excluding pneumonia, 5.5%); hemorrhagic transformation of stroke (4.5%); delirium (3.6%); cerebral edema (3.6%); pressure sores (1.5%); acute coronary syndrome (1.3%); heart failure (1.3%); seizures (0.8%); upper gastrointestinal bleed (0.7%); and thrombotic events (0.7%). The mortality rate was 6.1%.
Patients with TACI stroke had the highest complication rates: 33.6% developed pneumonia, 17.3% experienced hemorrhagic transformation, 15.4% had acute kidney injury, 13.1% developed cerebral edema, and 16.8% died during admission.
Statistical analysis revealed significant differences among stroke subtypes for all complications except seizures ($p = 0.054$).

Conclusion:
Patients with more severe stroke subtypes experienced higher rates of medical complications and mortality. Post-stroke complications further worsened recovery trajectories.

EP_C_06

E-Poster Clinical

GENDER DIFFERENCES IN STROKE: A STUDY AT KEK LOK SI CHARITABLE HOSPITAL

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Introduction:
Globally, the lifetime risk of stroke is 25.1% in women and 24.7% in men, with substantial regional variation. Stroke is more likely to be the first manifestation of cardiovascular disease in women, whereas coronary heart disease is more common in men. This study aims to investigate physiological characteristics and comorbidities in stroke patients stratified by gender.

Methods:
This retrospective cross-sectional study included all stroke patients treated at Kek Lok Si Charitable Hospital from October 2022 to December 2024. Data were extracted from medical records and analyzed using IBM SPSS version 26.

Results:
A total of 159 stroke patients were included (50.3% male, 49.7% female). Stroke subtypes included transient ischemic attack(TIA, 4.4%), lacunar infarct(LACI, 71.7%), partial anterior circulation infarct(PACI, 6.3%), total anterior circulation infarct(TACI, 3.1%), posterior circulation infarct(POCI, 4.4%), and intracerebral bleed(ICB, 10.1%).
Male patients: Mean age 71.6 years(SD 12.6). Mean arrival metrics: systolic blood pressure 156 mmHg(SD 23), diastolic 84 mmHg(SD 18), blood glucose 8.0 mmol/L(SD 3.3), NIHSS 3.6(SD 5.5), and MRS 2.4(SD 1.5). Comorbidities: hypertension (76.3%), diabetes mellitus (33.8%), dyslipidemia (48.8%), smoking (26.3%), prior stroke (20.0%), ischemic heart disease (8.8%), and heart failure (3.8%).
Female patients: Mean age 74.5 years(SD 11.7). Mean arrival metrics: systolic blood pressure 158 mmHg(SD 29), diastolic 83 mmHg(SD 16.6), blood glucose 8.3 mmol/L(SD 3.1), NIHSS 3.3(SD 5.6), and MRS 2.4(SD 1.5). Comorbidities: hypertension (74.7%), diabetes mellitus (41.8%), dyslipidemia (59.5%), smoking (1.3%), prior stroke (17.7%), ischemic heart disease (2.5%), and heart failure (2.5%).
No statistically significant differences were found between genders in age, systolic/diastolic blood pressure, blood glucose, NIHSS, MRS, or above comorbidities—except for smoking prevalence ($p < 0.05$).

Conclusion:
This study found no significant gender-based differences in physiological characteristics or comorbidities among stroke patients, except for smoking. A deeper understanding of gender-specific factors in stroke may improve clinical outcomes.

EP_C_07

E-Poster

Clinical

A STUDY ON STROKE PATIENTS TRANSPORTED TO HOSPITAL VIA AMBULANCE

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Introduction:
Stroke is the third leading cause of death in Malaysia. Due to the narrow therapeutic time window of 4.5 hours for thrombolytic therapy, only a limited number of stroke patients receive thrombolysis treatment. The treatment remains suboptimal because a significant number of patients experience late stroke identification and prehospital delays. This study evaluates patients' and caregivers' ability to recognize stroke symptoms during emergency calls and its impact on prehospital stroke care.

Methods:
This retrospective cross-sectional study included stroke patients transported via ambulance to Kek Lok Si Charitable Hospital from October 2022 to December 2024. Data were extracted from medical records and analyzed using IBM SPSS version 26.RESULTSA total of 28 stroke patients transported via ambulance were included. The mean age was 76.5 years (SD ±10.5), with 43% male and 57% female. Stroke subtypes included lacunar infarct (LACI, 71.4%), total anterior circulation infarct (TACI, 17.9%), posterior circulation infarct (POCI, 3.6%), and intracranial bleed (ICB, 2%).Among the 28 cases, 68% of patients and caregivers recognized stroke symptoms when contacting ambulance services. Unilateral weakness was the most common complaint reported to the ambulance team (89.4%), followed by dizziness and slurred speech (5.3% each). Of the patients reporting unilateral weakness, 94% suspected a stroke. A statistically significant relationship was observed between the type of complaint and stroke recognition ($p = 0.00$).The mean NIH Stroke Scale (NIHSS) score was 9.1(SD ±8.9), and the mean Modified Rankin Scale (MRS) score was 3.6 (SD ±1.4). No significant relationship was found between stroke recognition and NIHSS ($p = 0.136$), MRS ($p = 0.056$), stroke subtype ($p = 0.66$), or time to hospital ($p = 1.0$).

Conclusion:
Unilateral weakness was the most identifiable stroke symptom. Strengthening public education on stroke symptoms and optimizing ambulance response protocols may improve prehospital stroke care and increase timely thrombolysis rates.

EP_C_08

E-Poster Clinical

AMBULANCE USAGE AND STROKE ONSET TO HOSPITAL : A STUDY IN KEK LOK SI CHARITABLE HOSPITAL

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Introduction:
Stroke is a time-dependent medical emergency where rapid access to care improves outcomes. Delayed presentation to the hospital is the most common cause of exclusion from reperfusion therapy. This study aims to investigate the relationship between ambulance utilization and time from stroke onset to hospital arrival.

Methods:
This retrospective cross-sectional study included all stroke patients treated at Kek Lok Si Charitable Hospital from October 2022 to December 2024. Data were extracted from medical records and analyzed using IBM SPSS version 26.

Results:
A total of 159 stroke patients were included (50.3% male, 49.7% female). Stroke subtypes were transient ischemic attack (TIA, 4.4%), lacunar infarct (LACI, 71.7%), partial anterior circulation infarct (PACI, 6.3%), total anterior circulation infarct (TACI, 3.1%), posterior circulation infarct (POCI, 4.4%), and intracerebral bleed (ICB, 10.1%). Ambulance services were utilized by 17.6% of patients.
Non-ambulance users (mean age 72.3 years, SD 12.4): 51.9% male, 48.1% female. Mean arrival metrics: systolic blood pressure 157 mmHg(SD 25), diastolic 83 mmHg(SD 17), blood glucose 8.1 mmol/L(SD 3.3), NIHSS 2.2(SD 3.3), and MRS 2.1(SD 1.4). Time to hospital arrival: 30.5% within 4.5 hours, 24.5% 4.5–24 hours, 45% after 24 hours.
Ambulance users (mean age 76.8 years, SD 10.4): 42.9% male, 57.1% female. Mean arrival metrics: systolic blood pressure 155 mmHg(SD 30), diastolic 83 mmHg(SD 20), blood glucose 8.4 mmol/L(SD 3.0), NIHSS 9.3(SD 9.0), and MRS 3.74(SD 1.4). Time to hospital arrival: 39.3% within 4.5 hours, 28.6% 4.5–24 hours, 32.1% after 24 hours.
No statistically significant relationship was found between ambulance use and stroke subtype, time to arrival, age, or MRS. However, ambulance use correlated significantly with higher NIHSS scores ($p = 0.000$).

Conclusion:
Ambulance users had more severe strokes (higher NIHSS) but similar time-to-hospital arrival compared to non-users. Public education on ambulance use may help reduce delays in seeking car.

EP_C_09

E-Poster Clinical

A SYSTEMATIC REVIEW OF IMAGING IN ACUTE STROKE CARE: SHORTCOMINGS AND POTENTIAL

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Background:
The global incidence of stroke is escalating with acute ischemic stroke (AIS) constituting a significant proportion of cases. Modern imaging techniques have revolutionized stroke care; however, variations in imaging workflows across healthcare systems pose challenges, leading to inconsistent clinical outcomes and treatment delays. This systematic review aims to evaluate the efficacy, limitations, and opportunities associated with advancements in various imaging modalities for AIS management.

Methodology:
A rigorous systematic review was conducted following established guidelines, employing the PICO (Population, Intervention, Comparison, Outcomes) framework. The search strategy focused on articles pertaining to acute stroke patients undergoing imaging modalities (CT and MRI), patient selection and clinical outcomes. Scopus was utilized to identify relevant articles, and study selection and screening were managed using Rayyan, a web-based application. Inclusion and exclusion criteria were applied, with studies published between 2021 and 2024.

Results:
The search yielded 157 articles, with 10 ultimately meeting the inclusion criteria after a systematic screening process. The review highlighted several key findings. Non-contrast CT (NCCT) was found to be as effective as CT perfusion or MRI for patient selection in the late window for mechanical thrombectomy. MRI acceleration techniques were identified to make MRI feasible for acute stroke imaging while retaining quality, enabling a transition from CT to MRI-based workflows. However, MRI showed lower functional independence rates compared to CT, with similar mortality and haemorrhage outcomes. CT perfusion demonstrated moderate volumetric agreement with follow-up DWI infarct volume, with significant overestimation in certain methods.

Conclusion:
The crucial role of imaging in acute stroke management, highlighting both advancements and challenges. CT, CT perfusion, and MRI each offer unique benefits depending on the clinical situation, resource availability, and patient-specific factors. The review demonstrates that MRI can enhance diagnostic precision, particularly in complex scenarios, but logistical and operational challenges limit its routine integration.

EP_C_10

E-Poster Clinical

TARGETED EPIDURAL BLOOD PATCH VIA POSTERIOR TRANSFORAMINAL APPROACH IN VENTRAL CSF LEAK: A CASE-BASED PERSPECTIVE

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Background:
Ischemic stroke in older pediatric populations is an under-recognized emergency that may present following minor trauma, often with diagnostic delay. In the absence of congenital heart disease or systemic risk factors, trauma-induced thromboembolic events remain an important differential. This case highlights the need for vigilance in post-traumatic neurologic presentations.

Case Presentation:
A previously well 4-year-old boy sustained minor intraoral trauma after a fall. The next moing, he developed acute left lower limb weakness and headache. Non-contrast CT brain showed a hyperdense right middle cerebral artery (MCA) sign with early infarction. MRI with DWI confirmed acute infarction in the right MCA territory. MRA demonstrated absence of flow in the right inteal carotid artery (ICA), consistent with arterial occlusion. Echocardiography revealed no congenital structural abnormalities, no atrial septal defect, and no valvular vegetations, effectively excluding cardioembolic causes. A final diagnosis of thromboembolic ischemic stroke was made, and the child was managed conservatively with antithrombotic therapy and serial imaging.

Discussion:
This case exemplifies thromboembolic arterial ischemic stroke in a neurologically intact child post trivial trauma, with no predisposing cardiac pathology. Pediatric stroke frequently presents with nonspecific symptoms and lacks standardized clinical pathways, contributing to delays. The absence of cardiac anomalies redirects the etiological focus toward vascular causes, including localized thrombosis due to endothelial injury or hypercoagulability. Timely neuroimaging remains crucial to diagnosis and intervention.

Conclusion:
Stroke should remain a high differential in pediatric patients presenting with focal neurological signs post-trauma, even when the inciting event appears insignificant. In cases with no cardiac embolic source, primary vascular thromboembolism must be considered.

Keywords:
Pediatric ischemic stroke, thromboembolism, minor trauma, inteal carotid artery occlusion, non-cardiac stroke

EP_C_11

E-Poster Clinical

A RARE CASE OF PITUITARY APOPLEXY ASSOCIATED WITH MIDDLE CEREBRAL ARTERY INFARCT: A CORRELATION OR COINCIDENCE?

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Introduction:
Pituitary apoplexy is a rare and serious condition resulting from bleeding or impaired blood flow in the pituitary gland, often in the presence of pituitary macroadenoma. It typically presents with symptoms such as headache, visual disturbances and altered conciousness. An even rarer occurrence is its association with ischemic stroke in the middle cerebral artery(MCA). There were reports of ischemic stroke occur in the absence of direct compression on the ICA by the pituitary mass.

Method:
A case of a 36-year-old male who initially experienced headache and visual impairment. Initial CT Brain revealed a heterogeneous sellar lesion with peripheral calcification measuring approximately 2.4×3.2×2.7 cm (AP×W×CC), suggestive of a pituitary mass with possible apoplexy. No acute cerebral infarcts were seen at this stage. The patient's condition later worsened with new neurological deficits including dysarthria, hemianopia, and altered consciousness.

Result:
Follow-up imaging revealed a large ischemic infarct in the right fronto-parieto-temporal region, consistent with an MCA stroke. MRI Brain confirmed an acute infarction in the right MCA territory without hemorrhagic transformation. Additionally, a well-defined, pear-shaped sellar-suprasellar mass measuring 2.3x2.8×3.8 cm (AP×W×CC) was noted, consistent with a pituitary macroadenoma with intratumoral hemorrhage (pituitary apoplexy) but not directly compressing the right ICA. However, MR angiography showed attenuated flow in the right ICA from the C2 to C7 segments, suggestive of thrombosis in the intracranial portion of right ICA and reduced MCA perfusion. ECG showed no atrial fibrillation and lab results revealed hyperthyroidism and hypocortisolism without any coagulation disorders. The patient was started on corticosteroids and antithyroid medication. Subsequently he was referred to neurosurgery team for surgical management of the tumor.

Conclusion:
This case highlights a rare but potentially meaningful link between pituitary apoplexy and MCA stroke. Possible causes vasospasm, inflammation, or thrombosis. More research is needed to understand this connection and improve treatment strategies.

EP_C_12

E-Poster Clinical

LIFE AFTER STORMY DELIVERY:EXPERIENCE IN HOSPITAL SULTANAH BAHIYAH

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Introduction:
HIE can rarely occur as a complication of high spinal anesthesia during caesarean section. High spinal block is a potentially life-threatening complication of regional anesthesia, where the local anesthetic ascends excessively within the intrathecal space, causing profound sympathetic blockade, respiratory muscle paralysis, and cardiovascular collapse. In obstetric settings, such events can rapidly lead to mateal hypoxia and hypotension, jeopardizing both mateal and fetal oxygenation. When prolonged or inadequately managed, this hypoxic state can result in fetal brain injury manifesting as HIE. This rare but catastrophic sequence underscores the importance of vigilant anesthetic technique, early recognition of high spinal complications, and prompt multidisciplinary intervention during caesarean delivery.

Case Summary:
We presenting an unfortunate young lady 29 years old,primigravida at 38 weeks gestation with BMI 32kg/m² and no other comorbids who came into our labour ward for induction of labour for reduced fetal movement.She had been in labour room for 8 hours for oxytocin augmentation,however the labour failed to progress that necessitate delivery by caesarean section.
Before the skin incision after spinal anaesthesia,the patient SPO2 dropped and unrecordable BP.Hence the resuscitation with CPR started and the need for conversion to general anesthesia(GA).However due to difficult intubation due to short neck and edematous airway for about 20 minutes,the caeserean section complicated with HIE for both mother and baby.She required prolonged ICU stay and tracheostomy until discharge home.

Conclusion:
Multidisciplinary preparedness, meticulous anesthetic technique, and heightened awareness in obstetric settings are key to minimizing risk. As this rare presentation intersects obstetric and neurological domains, it also highlights the need for collaborative care pathways and long-term neurodevelopmental follow-up in affected neonates.

EP_C_13

E-Poster Clinical

ISCHEMIC STROKE: TYROSINE KINASE INHIBITOR-INDUCED OR POOR DIABETIC CONTROL

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Introduction:
The currently recognized ischemic stroke mechanisms are embolism, decreased perfusion, and thrombosis. However, tyrosine kinase inhibitor which is used in the therapy of chronic myeloproliferative neoplasm (CML) has known associated increased risk of peripheral arterial disease in view of its indirect effect on peripheral vasculatures and perivascular cells causing vasculopathy.

Case Report:
We reported a case of a 59 year old female with known case of CML which started on oral nilotinib 150mg OD and further tapered up to 300mg BD. She also has underlying DM and hypertriglyceridemia with fair compliance to medications however her control is otherwise suboptimal. HbA1c ranging 9.6%-12% while fasting serum lipid shows total cholesterol 4.62mmol/L, triglycerides 1.78 mmol/L, HDL 1.52 mmol/L and LDL 2.2 mmol/L with calculated ASCVD score is 11.3%. During her outpatient review, she complained of slowness in response with memory impairment approximately 1 year after nilotinib initiation. Clinical examination elicited slurred speech with left sided facial asymmetry with ataxia. Nilotinib was then withheld. She was arranged for admission for CT brain plain urgent which revealed recent stroke with multifocal chronic infarct with more recent infarct seen at right corona radiata. ECG shows no evidence of atrial fibrillation or any ischemic changes. Her treatment was then changed to oral imatinib 400mg OD. This patient discharged well with referral for rehabilitation and optimum guideline-directed medical therapy.

Conclusion:
Clinicians should have suspicion when encountering such a case as all TKI have increased cardiovascular risk event manifesting as systemic thrombotic complications. Thus, CML patients with known type 2 diabetes mellitus should have stricter and more optimum diabetic control.

EP_C_14

E-Poster Clinical

PREVALENCE AND FACTORS ASSOCIATED WITH EARLY NEUROLOGICAL DETERIORATION FOLLOWING INTRAVENOUS THROMBOLYSIS AMONG ACUTE ISCHEMIC STROKE PATIENTS IN HOSPITAL SULTANAH NUR ZAHIRAH, TERENGGANU

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Introduction:
Intravenous thrombolysis (IVT) with recombinant tissue plasminogen activator (rt-PA) remains the standard of care for acute ischemic stroke (AIS). However, a subset of patients fails to show the expected clinical improvement within the first 24 hours post-treatment. Previous studies have reported that approximately 14-30% of patients experience early neurological deterioration (END) following IVT. Although definitions of END vary, a commonly accepted criterion is an increase of ≥4 points in the National Institutes of Health Stroke Scale (NIHSS) score within 24 hours of thrombolysis. This study aims to identify factors associated with the failure of thrombolysis in this patient group.

Methods:
This cross-sectional study involved a retrospective review of AIS patients who received IVT between 2014-2024. Patients who demonstrated a worsening of ≥4 in their NIHSS score at 24 hours post-treatment were classified as having END. Sociodemographic data, comorbidities, and clinical characteristics were collected and analysed using IBM SPSS Statistics version 27 to determine the prevalence of END and its associated risk factors. Descriptive statistics were used to report the prevalence of END, and binary logistic regression analysis was performed to identify the associated factors.

Results:
During the study period, 341 patients received IVT. The mean age was 59.5 years, with a majority being Malay, and 61.6% were male. The prevalence of END was 12.6%. Binary logistic regression analysis showed that symptomatic intracranial haemorrhage (sICH) (adjusted odds ratio [AOR] = 11.462, 95% CI: 5.453–24.093, $p < 0.001$) and a family history of stroke (AOR = 15.079, 95% CI: 1.073–211.812, $p = 0.044$) were significantly associated with END.

Conclusion:
Approximately one in eight AIS patients receiving IVT experienced END. sICH and family history of stroke appear to be key contributing factors to thrombolysis failure. These findings highlight the need for early risk stratification and closer monitoring of high-risk patients.

EP_C_15

E-Poster Clinical

BLUNT INTRAORAL TRAUMA LEADING TO DELAYED ISCHEMIC STROKE IN A CHILD: A RARE CASE OF TRAUMATIC CAROTID DISSECTION

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Case Summary:
A previously healthy 4-year-old boy sustained a low-impact intraoral injury after colliding with a metal structure in a supermarket. He developed headache the following moing and subsequently exhibited acute left lower limb weakness. Non-contrast CT brain revealed an acute infarct in the right middle cerebral artery (MCA) territory, with a dense MCA sign and an air locule extending from the oropharynx to the distal cervical inteal carotid artery. MRI with diffusion and FLAIR sequences confirmed the infarct, and MRA demonstrated absent flow in the right ICA, consistent with dissection. CT angiography further identified a long-segment right ICA occlusion with concurrent thrombosis of the right inteal jugular vein. The patient was managed conservatively with antithrombotic therapy and close neurological monitoring.

Discussion:
This case illustrates an unusual mechanism of pediatric ischemic stroke: blunt intraoral trauma causing ICAD and thromboembolic MCA infarction. In children, the extracranial ICA is anatomically predisposed to trauma-induced dissection due to its mobility and lack of surrounding bony protection. Radiological features such as the dense MCA sign, FHVS, flow voids, and air locules in the carotid sheath are key diagnostic clues. Timely recognition is imperative, as early antithrombotic therapy can prevent secondary embolic events. Treatment remains controversial in pediatric populations, with no clear consensus on anticoagulation versus antiplatelet use.

Conclusion:
This case underscores the necessity of maintaining high clinical suspicion for BCVI in children with neurological deficits following oropharyngeal trauma. Early imaging, particularly with CTA and MRA, plays a pivotal role in diagnosis. Multidisciplinary management and further research are required to guide therapeutic decision-making in pediatric ICAD.

Keywords:
Pediatric stroke; Inteal carotid artery dissection; Intraoral trauma; Ischemic infarction; Blunt cerebrovascular injury

EP_C_16

E Poster Clinical

COMPARATIVE SAFETY AND EFFICACY OF MECHANICAL THROMBECTOMY VERSUS INTRAVENOUS THROMBOLYSIS IN PEDIATRIC ISCHEMIC STROKE: A SYSTEMATIC REVIEW OF LONG-TERM NEUROCOGNITIVE AND PSYCHOSOCIAL OUTCOMES

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Introduction:
Pediatric ischemic stroke is a rare but devastating condition, with treatment strategies largely extrapolated from adult data due to ethical issues of conducting clinical trials in pediatric populations. Mechanical thrombectomy (MT) and intravenous thrombolysis (IVT) are emerging interventions, yet comparative long-term outcomes in the pediatric population remain underexplored.

Objectives:
To systematically evaluate and compare the safety, efficacy, and long-term functional, neurocognitive, psychosocial, and recurrence outcomes of MT and IVT in pediatric ischemic stroke.

Methods:
A systematic literature search was conducted using PubMed, Embase, Scopus, Cochrane Library, Web of Science, and Google Scholar from January 2000 to April 2025. Studies reporting outcomes of pediatric ischemic stroke patients (age <18) treated with MT or IVT were included. Data on safety, efficacy, and long-term outcomes — including Pediatric Stroke Quality of Life Measure, Pediatric Quality of Life Inventory (PedsQL), and Pediatric Stroke Recurrence and Recovery Questionnaire (psRRQ) — were extracted. A qualitative synthesis was performed.

Results:
From 426 records, 21 studies (8 MT, 13 IVT) met inclusion criteria. MT demonstrated superior successful recanalization (84%) and favorable long-term functional outcomes (mRS 0–2 in 75%) compared to IVT (54% and 61%). Neurocognitive and psychosocial outcomes favored MT, with higher PedsQL and psRRQ scores at 6–24 months. Recurrence rates were lower in MT (3.1%) than IVT (6.8%). Disability-free survival was higher post-MT (71%) versus IVT (59%). Complication rates were comparable.

Conclusion:
MT appears to offer superior recanalization, functional, neurocognitive, and psychosocial outcomes in pediatric ischemic stroke. Larger multicenter studies are warranted.

EP_C_17

E Poster Clinical

PUSHING THE FRONTIERS OF NEUROINTERVENTION: A SYSTEMATIC COMPARISON OF ROBOTIC-ASSISTED AND MANUAL ENDOVASCULAR TECHNIQUES

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Introduction:
Robotic neurointervention represents a paradigm shift in endovascular care. Yet, its clinical utility across cerebrovascular indications remains incompletely defined.

Objectives:
To evaluate procedural performance, safety, and radiation exposure across robotic-assisted and manual interventional neuroradiology (INR) procedures in a stratified, indication-specific analysis.

Methods:
A PRISMA-compliant systematic review of PubMed, Embase, Scopus, Cochrane, and Web of Science (through April 2025) was conducted. Comparative studies in humans assessing robotic vs. manual INR were included. Outcomes assessed: technical success, complications, operator radiation exposure, and conversion to manual technique.

Results:
Thirteen studies encompassing 738 robotic and 720 manual procedures were analyzed. Carotid artery stenting demonstrated comparable success rates (robotic: 90–94%; manual: 96–100%) with 20–45% reduction in operator radiation exposure. In diagnostic angiography, robotic systems achieved 95–100% success but universally required manual assistance. Aneurysm embolization with robotic support showed 96% success and 7% unplanned conversions. AVM and sinus stenting had a 92% robotic success rate with no major complications. Across indications, complication rates remained low (<2%) in both cohorts.

Conclusion:
While robotic-assisted INR is not yet autonomous, it delivers competitive procedural efficacy with significantly reduced operator radiation. Unlike previous reviews, our analysis dissects outcomes by procedural type and highlights underreported system limitations. These insights support targeted adoption and inform future robotic design and randomized evaluation.

EP_C_18

E-Poster Clinical

AGAINST THE CLOCK AND THE ODDS: MECHANICAL THROMBECTOMY IN THE SETTING OF A FRONTAL MENINGIOMA, CAROTID DISSECTION, AND BILATERAL PULMONARY EMBOLI

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Introduction:
Intravenous thrombolysis remains the cornerstone of acute ischemic stroke therapy, but contraindications such as intracranial neoplasms can necessitate alternative approaches. In some instances, large brain tumors increase the risk of hemorrhage, making thrombolytic agents unsafe. This high risk case presents a patient with a large frontal meningioma, significant vasogenic edema, acute ischemic stroke, carotid dissection, and bilateral pulmonary emboli, where direct mechanical thrombectomy was performed to avoid the risks associated with thrombolytics.

Methods:
A 59-year-old hypertensive female presented to the ED with a two week history of headache, dyspnea, followed by acute stuttering speech and aphasia. Initial NIHSS was 2, escalating to 22 in the ED. CT brain revealed a 3.3 cm anterior frontal meningioma with vasogenic edema. CT angiography revealed tapered occlusion of the left carotid artery and non-opacification of the left ICA. CT-PE protocol confirmed bilateral central pulmonary emboli. Given the meningioma and cerebral edema, thrombolysis was contraindicated. Emergent thrombectomy targeted the left M1 segment and common carotid artery (CCA).

Results:
Reperfusion of the left ACA and MCA was achieved (TICI 2b/3). Despite persistent ICA occlusion, ACA and MCA were patent post-procedure. Neurological status stabilized. Due to bilateral PEs, anticoagulation was initiated with heparin and transitioned to cangrelor. Thrombolytics were withheld due to high risk of tumor-associated intracranial hemorrhage.

Conclusion:
This case highlights two key insights: **Mechanical thrombectomy without thrombolytics** was critical. The large meningioma and edema contraindicated IV tPA due to hemorrhagic risk. Successful revascularization demonstrates thrombectomy's value as a primary therapy in complex neuro-oncologic stroke. **Risk-balancing in dual pathology:** Although thrombolytics could have benefited the pulmonary emboli, intracranial bleeding risk precluded their use. In patients with concurrent neurovascular and cardiopulmonary threats, therapeutic choices must prioritize safety while preserving efficacy.

EP_C_19

E-Poster Clinical

UNMASKING TRUE STROKES HIDDEN BENEATH STROKE MIMICS: SIMULTANEOUS PRESENTATION OF SEVERE HYPOTHYROIDISM & ACUTE ISCHEMIC STROKE

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Introduction:
Stroke remains a major cause of morbidity and mortality worldwide. However, clinical overlap with stroke mimics, such as severe hypothyroidism, may complicate timely diagnosis. The bidirectional relationship between hypothyroidism and cerebrovascular events creates unique diagnostic and therapeutic challenges.

Case Presentation:
An 83-year-old male with hypertension, heart failure, chronic kidney disease, and a history of radioablation-induced hypothyroidism presented with a five-day history of left-sided weakness, dysphagia, and facial droop. Initial NIH Stroke Scale (NIHSS) score was 3. Non-contrast CT was negative for acute infarction. Laboratory evaluation revealed profound hypothyroidism (TSH 79.22 uIU/mL, Free T4 0.25 ng/dL). MRI brain confirmed an acute right corona radiata infarct. The size of the infarct (15 mm) and patient's risk profile prompted cardiac evaluation for occult embolic sources. Both transthoracic and transesophageal echocardiograms were unremarkable, and an insertable loop recorder was placed for extended atrial fibrillation surveillance.

Results
Levothyroxine therapy was escalated from 25 mcg to 125 mcg daily. Stroke management included a 21-day dual antiplatelet regimen followed by lifelong aspirin, consistent with minor non-cardioembolic stroke guidelines. The patient's neurological symptoms improved with hormone normalization, and he was discharged with continued endocrinologic and neurologic follow-up.

Conclusion:
This case underscores the complexity of diagnosing stroke in patients with severe hypothyroidism, where overlapping clinical features may delay recognition of acute cerebral ischemia. A multidisciplinary approach, incorporating hormonal evaluation and cardioembolic risk stratification, is essential. Early MRI and continuous cardiac monitoring may be pivotal in similar presentations, ensuring timely and targeted treatment.

EP_C_20

E-Poster Clinical

RHEUMATIC MITRAL STENOSIS WITH HUGE LA THROMBUS COMPLICATING CARDIOEMBOLIC STROKE

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Introduction:
Atrial fibrillation (AF) with rheumatic mitral stenosis significantly increases thromboembolic risk, particularly in the presence of left atrial (LA) thrombus. This case underscores the importance of early anticoagulation, close monitoring, and clinical judgment in complex scenarios.

Case:
A 33-year-old mother presented to our secondary hospital with one day of palpitations. She was admitted for symptomatic new-onset AF. Transthoracic echocardiography showed severe mitral stenosis (planimetry 0.7 cm²), a giant LA (6.5 cm), and a large thrombus (4 × 2.1 cm). Despite recommendations for inpatient anticoagulation and cardiothoracic referral, she opted for early discharge due to caregiving duties. Warfarin and parenteral anticoagulants were initiated, with INR monitoring at the nearest clinic.
On Day 3, she reported intermittent light-headedness. Her INR was 1.7; neurological exam was unremarkable. She declined readmission. On Day 5, she developed aphasia and right-sided weakness (NIHSS 11). CT brain revealed a hyperacute left MCA infarct; INR was 2.3. Repeat echocardiography showed thrombus resolution, suggesting cardioembolic stroke. Anticoagulation was temporarily withheld; no reversal agents were administered.
On Day 4 post-stroke, repeat CT showed increasing infarct with oedema, though she remained clinically stable. Warfarin with bridging anticoagulation was restarted on Day 7, guided by imaging and clinical status. She was discharged on Day 11 with INR 2.6. Her neurological recovery was excellent (mRS improved from 4 to 1), but she declined mitral valve surgery.

Discussion:
AF, mitral stenosis, and LA enlargement are major thromboembolic risk factors[1]. Warfarin is standard, as DOAC trials excluded severe mitral stenosis. Imaging-guided and clinical monitoring is essential in cardioembolic stroke management[2–4]. Early thrombolysis for large LA thrombi may merit consideration[5].

Conclusion:
Early, sustained anticoagulation and close monitoring are crucial in rheumatic AF with LA thrombus. Social factors must be addressed to prevent avoidable complications like cardioembolic stroke and treatment delays.

EP_C_21

E Poster

Clinical

CASE REPORT: ARTERY OF PERCHERON INFARCTION DIAGNOSIS BY MRI 3 TESLA AND LOW-DOSE INTRAVENOUS THROMBOLYSIS TREATMENT

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Background and Objectives
Occlusion of the Percheron artery (AOP) causes bilateral thalamic infarction, often leading to a decline in consciousness.

Case Presentation
A 77-year-old male patient was admitted to the hospital 11 hours ago. The family discovered that the patient was drowsy, unresponsive, and did not answer when callede. The patient was brought to a local hospital by family, where a brain CT scan was performed, but the diagnosis was unclear, and no treatment was administered. On admission, he was anesthetized with a GCS of 7 (E1M5V1), BP 120/80 mmHg, sPO2 98%, painful stimulus response appropriate, pupils 2 mm, with light reflex, and NIHSS score of 35. Medical history: Hypertension, treated intermittently with 5mg Amlodipine.
After that about thirty minutes the patient had a magnetic resonance imaging of the head. The MRI showed increased DWI signal within the periventricular white matter consistent with paramedian thalamic nuclei and midbrain involvement.
The patient was treated with rtPA (Alteplase) 0.6mg/kg. After 24 hours of fibrinolytic treatment, the patient could not open his eyes but responded appropriately to pain. After 5 days, the patient was awake, communicated well, and had no weakness. One week later, the patient was alert, occasionally confused, with no weakness, and an NIHSS score of 0.

Conclusion
Artery of Percheron obstruction is a rare form of ischemic stroke, but recognition of the possible presence of an AOP obstruction both clinically and in imaging is essential to the administration of time-sensitive treatments, such as mechanical removal of the obstruction or tPAs. This shows that brain MRI to diagnose stroke is very necessary, especially in cases of cerebral infarction in the posterior circulation.

EP_C_22

E-Poster Clinical

IS IT A STROKE? A DESCRIPTIVE, RETROSPECTIVE ANALYSIS ON ASSESSING DIAGNOSTIC ACCURACY IN STROKE ACTIVATION PATHWAYS FOR DIZZINESS USING MRI OUTCOME - A 5 YEAR EXPERIENCE AT HOSPITAL SULTAN ABDUL AZIZ SHAH

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Introduction:
Dizziness is a frequent yet diagnostically challenging symptom in acute care, often prompting urgent stroke code activation due to conce for posterior circulation stroke (POCI). However, its nonspecific nature may lead to overactivation, excessive imaging, and resource strain.

Objective:
To evaluate the diagnostic yield and operational burden of stroke code activations triggered by dizziness at Hospital Sultan Abdul Aziz Shah over a five-year period, and to quantify true stroke versus non-stroke diagnoses.

Methods:
A retrospective descriptive study was conducted on patients presenting with dizziness who triggered stroke code activation from 2020 to 2025. Data included demographics, referral source, stroke code type, imaging results, final diagnosis, and interventions. Diagnoses were categorized as acute ischemic stroke, posterior transient ischemic attack (TIA), hemorrhage, peripheral cause, or tumor. Interventions included thrombolysis, thrombectomy, or no acute treatment.

Results:
Among 295 stroke code activations for dizziness, 63.39% (187) were non-stroke, while 36.61% (108) had confirmed strokes. Non-stroke cases included peripheral causes (61.69%, 182) and tumors (1.61%, 5). Stroke diagnoses comprised acute ischemic stroke (29.83%, 88), posterior TIA (5.08%, 15), and hemorrhage (1.69%, 5). Imaging was more frequent in Code Red (21%) and Code Yellow (50.8%) activations, though interventions were limited: thrombolysis in 12.5% (11) and thrombectomy in 1.14% (1). Most activations originated from walk-in patients (73.2%, 216), followed by KKM hospitals (14.2%, 42), in-hospital activations (6.8%, 20), and other sources (5.8%, 17). Demographically, 64.7% (191) were male; ethnically, 78.3% were Malay (231), 14.6% Chinese (43), 5.8% Indian (17), and 1.3% Others (4). No significant association between demographics or source of activation and confirmed stroke was observed.

Conclusion:
Dizziness-based stroke activations yield a low rate of posterior circulation strokes. These results emphasize the need for refined triage protocols to improve diagnostic accuracy and reduce unnecessary stroke team mobilizations.

EP_C_23

E-Poster Clinical

INTRAVENOUS THROMBOLYSIS WITH ALTEPLASE IN ACUTE ISCHAEMIC STROKE: A SINGLE-CENTRE RETROSPECTIVE STUDY 2019 TO 2024

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Introduction:
Alteplase is an intravenous thrombolytic used for treating acute ischaemic stroke (AIS), administered within 4.5 hours of symptom onset. Timely administration can dissolve clots in vessels, restore normal blood flow in the brain, and minimise cell death. Given its high cost and specialized nature of the procedure, analysing real-world data will provide valuable insights into patient recovery and guide future service improvements.

Objective:
This study aimed to assess the clinical characteristics of patients who received alteplase from 2019 to 2024 and their treatment outcomes.

Methods:
This was a retrospective study at Hospital Sultan Abdul Halim, Kedah. Patients treated with alteplase from 2019 to 2024 were universally sampled. A data collection form was prepared to collect the information from electronic medical records. The study variables included sociodemographic properties, clinical characteristics and treatment outcome. Data was analyzed using SPSS version 27.0. Ethical approval was obtained (NMRR ID-25-00614-BJP (IIR)).

Results:
This study analyzed 38 patients, predominantly Malay (78.9%, n=30) and male (57.9%, n=22), with over half (55.3%, n=21) experiencing stroke before age 60. The median hospital stay was 6 ± 5 days. At admission, 73.7% (n=28) presented with mild to moderate stroke (NIHSS 1–15), increasing to 86.9% (n=33) within 24 hours post-thrombolysis. Severe stroke cases (NIHSS ≥ 16) declined from 26.3% (n=10) at admission to 5.3% (n=2) at discharge. Two deaths (5.3%) occurred due to aspiration pneumonia and evolving right MCA infarction. NIHSS scores improved by ≥ 4 points in 68.4% (n=26) of patients, while 26.3% (n=10) showed no improvement.

Conclusion:
Most of the thrombolysed patients were Malay males, with over half of the group being under 60 years old. A minority presented with severe stroke, while the majority exhibited mild to moderate symptoms prior to thrombolysis. Overall outcomes suggest favourable early recovery.

EP_C_24

E-Poster Clinical

YOUTH UNDER SIEGE: RARE CERVICAL CORD INFARCTION AND ITS REHABILITATION CHALLENGES - A CASE SERIES

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Introduction
Spinal cord infarction (SCI) is a rare but serious neurological emergency, representing 1-2% of all strokes, and is often misdiagnosed as an inflammatory or demyelinating condition, delaying treatment.

Case Series
Case 1: 24-year-old NKMI woman presented with right-sided weakness followed by sudden GCS decline. She developed areflexic hemiplegia progressed to tetraparesis (C4 AIS B-like) and required tracheostomy for respiratory failure. MRI showed long-segment T2-weighted hyperintensities in the cervical cord and cerebellum. CSF analysis, nerve conduction studies, and CTA were unremarkable. Despite plasmapheresis and high-dose steroids for presumed ADEM, she remained fully dependent (Modified Barthel Index (MBI) 0/100) and received carer training.

Case 2: 19-year-old NKMI woman developed sudden bilateral limb weakness and numbness and became quadriplegic (C4 AIS C-like), requiring tracheostomy. MRI revealed infarction of the medulla oblongata and cervical cord. CSF analysis, nerve conduction studies, autoimmune screening and CTA were unremarkable. She is also carer-dependent (MBI 0/100) and needs full assistance with daily activities but retains good cognition.

Discussion
SCI is less common than cerebral and retinal infarction. Risk factors include hypertension (40%), smoking (30%), dyslipidemia (29%), and diabetes (16%), though up to 28% have none. Other causes are fibrocartilaginous embolism, hypercoagulability, aortic surgery, and vertebral manipulation; 44–74% of cases remain cryptogenic, as seen here.

Clinically, motor (92%), sensory (85%), autonomic (76%), and pain (70%) symptoms predominate, with thoracic (33%) and cervical (24%) levels most affected. MRI hallmarks include anterior-horn “owl’s eyes” and sagittal pencil-shaped lesions. The role of acute fibrinolysis remains controversial.

Rehabilitation emphasizes preventing complications of immobilisation through passive range-of-motion exercises, antigravity limb exercises, regular turning, and deep-breathing.

Conclusion
High clinical suspicion for SCI is crucial in acute flaccid paralysis, especially in young adults without vascular risks. Early spinal DWI-MRI expedites diagnosis. Rehabilitation faces significant challenges in Malaysia due to the severe impairments associated with SCI.

EP_C_25

E-Poster Clinical

SUCCESSFUL VISUAL RECOVERY AFTER LATE THROMBOLYSIS FOR OCCIPITAL INFARCT IN A STROKE CHAMELEON: A CASE FOR IMAGING-GUIDED EXTENSION

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Introduction:
Acute stroke diagnosis may remain a complex time-sensitive challenge particularly when presentation is atypical. Timely intervention with intravenous thrombolysis or endovascular therapy requires rapid and accurate decision-making. “Stroke chameleons” and “stroke mimics” account for up to 26-43% of suspected stroke presentations in emergency settings.
We report a case of stroke chameleon, presenting with acute painless vision loss, referred from emergency department to ophthalmology team for central retinal artery occlusion (CRAO). Case was subsequently referred to neurology team for hyperacute stroke. We emphasize the importance of considering a rare presentation of common disease and role of computed tomography perfusion (CTP) imaging in diagnosing hyperacute stroke in a difficult case. She was treated with alteplase infusion and vision improved.

Case description:
A 56 year-old Javanese lady with underlying diabetes, hypertension and chronic kidney disease stage 2, presented with sudden onset of painless vision loss in both eyes. At Emergency department, visual acuity was counting fingers in her left eye and 6/120 in right eye. Due to the background of poorly controlled diabetes, she was initially referred to ophthalmology team for CRAO or retinal detachment.
Ophthalmology assessment revealed suspicious loss of vision in form of homonymous hemianopia and only then referred to neurology. Urgent CTP showed ischaemic penumbra at left occipital region while the CT brain plain showed old infarct at right occipital. Intravenous thrombolysis was done at 6 hours from onset and she was admitted to stroke unit. The following day, her vision improved subjectively. Visual acuity reassessment was 6/48 in left eye and 6/30 in right eye.

Conclusion:
Stroke chameleon is still common and remains challenging especially in setting where CTP or MRI are not available. We would like to emphasize need for high index of suspicion in sudden onset presentation and the role of CTP in acute stroke management.

EP_C_26

E-Poster Clinical

WHEN IT'S NOT A STROKE: A CASE OF OSMOTIC DEMYELINATION SYNDROME PRESENTING WITH ACUTE WEAKNESS

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Introduction:
Osmotic demyelination syndrome (ODS) is a severe neurological complication resulting from rapid correction of chronic hyponatremia. Correction exceeding 8-10 mmol/L per day can impair brain cell osmolyte reacquisition, leading to demyelination in the pons, presenting similarly to stroke.

Case presentation:
We describe a 58-year-old female previously admitted for symptomatic hyponatremia (96 mmol/L) secondary to hydrochlorothiazide use and poor oral intake. Her serum sodium was corrected excessively (24 mmol/L/day). She returned one day post-discharge with stroke-like symptoms (quadriplegia, dysphonia, and respiratory distress) necessitating intubation. MRI brain revealed the characteristic trident sign consistent with ODS. Intravenous immunoglobulin (IVIG) therapy was initiated on day 14 post-symptom onset for five days. Remarkably, she fully recovered neurologically within two months.

Discussion:
There is no definitive treatment for ODS yet. While immediate relowering of serum sodium levels is advised in acute overcorrection, its efficacy diminishes with delayed presentation. IVIG and plasmapheresis, beneficial within the initial week, may modulate immunological processes linked to myelinotoxicity. Rehabilitation therapies, including physical, occupational and speech therapy, significantly aid neurological recovery. Survival rates approximate 69% with 56% of survivors experiencing minimal neurological deficits. To enhance patient safety, medical staff require ongoing awareness education on ODS. Meticulous documentation and clear communication with patients and families are essential from a medico-legal standpoint.

Conclusion:
IVIG and/or plasmapheresis may be effective even beyond one week from symptom onset, underscoring the importance of individualized therapeutic approaches in managing ODS.

EP_C_27

E-Poster Clinical

THE USE OF NEUROMUSCULAR ELECTRICAL STIMULATION (NMES) COMBINED WITH MASAKO EXERCISE ON PATIENT WITH OROPHARYNGEAL DYSPHAGIA IN CHRONIC POST STROKE

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Introduction:
Much of the literature suggests the use of Neuromuscular Electrical Stimulation (NMES) for patient with dysphagia during the subacute phase. In this case report, we investigated the use of NMES combined with the Masako exercise in relation to the Penetration-Aspiration Scale (PAS) in a patient with oropharyngeal dysphagia during the chronic post-stroke phase.

Method:
A case of a 63-year-old man diagnosed with left occipital-parietal and left pontine infarct is presented. A Fiberoptic Endoscopic Evaluation of Swallowing (FEES) was conducted on the seventh day after the stroke. Conventional swallowing therapy sessions were carried out prior to the administration of NMES, which was introduced six months post-stroke. Before initiating NMES combined with the Masako exercise, PAS baseline measurements were taken. The pre-treatment PAS score was 8 (indicating silent aspiration), and the baseline surface electromyography (sEMG) threshold averaged 45 µV. Seven consecutive sessions were conducted, each lasting 30 to 40 minutes, and performed once a week. Electrodes were placed in vertical and horizontal configurations during the sessions. The patient was instructed to perform the Masako exercise when stimulation was felt. The Masako exercise is a commonly used swallowing technique that helps strengthen the superior pharyngeal constrictor muscle involved in the swallowing process.

Result:
Pre-treatment results showed a PAS score of 8 and a sEMG reading of 45 µV. After the intervention, the patient demonstrated improved swallowing outcomes, despite being in the chronic phase of stroke recovery. Post-treatment PAS scores ranged from 3 to 1 (indicating that contrast remains above vocal fold), and sEMG increased to 67 µV. These post-treatment results suggest that patient in the chronic phase can still benefit from NMES combined with the Masako exercise.

Conclusion:
This case illustrates how NMES combined with the Masako exercise can improve swallowing outcomes for patient with oropharyngeal dysphagia during the chronic post-stroke phase.

EP_C_28

E-Poster Clinical

RE-EVALUATION OF STROKE THROMBOLYSIS SERVICE IN HOSPITAL MELAKA

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Introduction:
Intravenous thrombolysis (IVT) was introduced at Hospital Melaka in 2019. In 2022, an audit assessed the time from patient arrival at the Emergency Department (ED) to thrombolysis administration. This re-evaluation, covering January 2023 to December 2024, uses similar methodology to identify improvements in the service over time.

Methods:
Data were collected from clinical notes during patients' initial admission, the local thrombolysis registry maintained by the Neurology Unit, and follow-up records from the Neurology Clinic after discharge. Key data included time of symptom onset, hospital arrival, ED and stroke team evaluations, completion of non-contrast CT scans, and thrombolysis administration. Outcomes were assessed using the Modified Rankin Scale (mRS) score at 3-month follow-up.

Results:
Of 147 stroke patients who underwent stroke protocol activation, 14 received IVT (9.5% of the cohort). The main reasons for not administering thrombolysis were low NIHSS score, rapid neurological recovery, low ASPECT score, and late presentation. Among the thrombolysis group, 86% (12 patients) had initial evaluation within 10 minutes, 50% (7 patients) had stroke protocol activation within 15 minutes, 71% (10 patients) completed a CT scan within 25 minutes, 84% (12 patients) received thrombolysis within 35 minutes post-CT, and 71% (10 patients) were thrombolysed within 60 minutes of arrival. At 3-month follow-up, 50% (7 of 14) achieved mRS score of 1–2, indicating functional independence.

Conclusion:
The study demonstrated that most patients met NIH-recommended response times, with an overall improvement in thrombolysis times compared to 2022 data. However, IVT remains underutilized, with thrombolysis rates of only 1.1% in 2023 and 3.7% in 2024. Nonetheless, these rates are comparatively higher than those reported in the National Stroke Registry, where only 0.65% of patients received IVT between June 2005 and June 2015. Continued efforts to improve early recognition and timely intervention are essential to increase thrombolysis utilization.

EP_C_29

E-Poster Clinical

ACUTE HYDROCEPHALUS: A NEUROLOGICAL SEQUELAE OF CEREBELLAR STROKE

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Introduction:
Cerebellar stroke, accounting for less than 5% of all strokes, carries a risk of rare but life-threatening complications, including acute hydrocephalus. This report presents a case of acute obstructive hydrocephalus following a cerebellar infarct, emphasizing the importance of recognizing atypical stroke presentations.

Method:
A 49-year-old gentleman with poorly controlled diabetes, who had defaulted on medications and follow-up, presented with a 3-day history of dizziness, vomiting, and headache. Notably, he denied focal limb weakness, sensory deficits, or visual disturbances. Neurological examination revealed left-sided cerebellar signs (horizontal nystagmus, past pointing, and dysdiadochokinesia), while other findings were unremarkable. In-hospital blood glucose levels ranged from 11-17 mmol/L. A subsequent CT brain scan confirmed an acute left cerebellar infarct with obstructive hydrocephalus and no evidence of hemorrhage. An ECG showed no atrial fibrillation. The patient underwent urgent neurosurgical intervention with the insertion of a right ventriculosubgaleal shunt.

Result:
This case underscores that acute hydrocephalus, although a rare sequela of cerebellar infarction, represents a significant neurological emergency. The initial absence of typical stroke symptoms, such as motor or sensory deficits, highlights the critical need for clinicians to recognize subtle cerebellar signs as potential indicators of stroke. Timely neuroimaging, as demonstrated in this case, is paramount for the prompt diagnosis and management of both the infarct and its complications.

Conclusion:
While cerebellar strokes constitute a minority of all stroke events, they can lead to severe morbidity and mortality, particularly when complicated by acute hydrocephalus. This case emphasizes the importance of maintaining a high index of suspicion for cerebellar involvement in patients presenting with dizziness, vomiting, and headache, especially in the presence of risk factors like poorly controlled diabetes. Early recognition of cerebellar signs and prompt neuroimaging are crucial for the timely diagnosis and management of this potentially devastating complication.

EP_C_30

E-Poster Clinical

A MASKED STORM: THYROID STORM-INDUCED ATRIAL FIBRILLATION LEADING TO FATAL STROKE MIMICKING SUBSTANCE-INDUCED CARDIOMYOPATHY IN A YOUNG ADULT

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Introduction:
Young stroke has diverse etiologies, making identification of the underlying cause crucial. Thyroid storm, a severe hyperthyroid state, can induce atrial fibrillation, a known embolic stroke risk factor. We present a unique case of a young adult who developed fatal stroke secondary to atrial fibrillation caused by previously undiagnosed thyroid storm, initially masked by features suggestive of substance-induced cardiomyopathy.

Methods:
A 29-year-old Malay gentleman with a history of smoking and drug abuse presented with dyspnea and non-productive cough. Initial examination revealed agitation, diaphoresis, and irregular tachycardia. Positive urine toxicology for amphetamine and methamphetamine led to initial suspicion of substance-induced cardiomyopathy with atrial fibrillation. Persistent tachycardia and clinical deterioration prompted subsequent thyroid function tests, revealing suppressed TSH (<0.008 mIU/L) and elevated free T4 (64 pmol/L), with a Burch-Wartofsky score of 65, confirming thyroid storm as the underlying cause of atrial fibrillation. Despite aggressive thyroid storm treatment, the patient developed acute right middle cerebral artery infarcts with hemorrhagic transformation and cerebral edema, ultimately leading to death.

Result:
This case highlights thyroid storm as a rare but critical cause of atrial fibrillation leading to young stroke. The initial presentation, confounded by a positive drug screen, delayed diagnosis of the underlying endocrine emergency. Atrial fibrillation in severe hyperthyroidism likely resulted in thromboembolism and subsequent stroke. This underscores the importance of considering and investigating underlying endocrine disorders, such as thyroid storm, in young patients with unexplained atrial fibrillation and stroke, even with other potential risk factors.

Conclusion:
This case emphasizes that thyroid storm should be considered in the differential diagnosis of young stroke associated with atrial fibrillation. Prompt recognition of thyroid storm through timely thyroid function testing is essential for appropriate management and potentially preventing devastating complications like embolic stroke.

EP_C_31

E-Poster Clinical

THROMBOLYSIS FOR HIGH NIHSS CARDIOEMBOLIC STROKE: A CASE REPORT

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Introduction:
This report details a young male with chronic rheumatic heart disease and a smoking history who presented with acute middle cerebral artery (MCA) infarction, highlighting the challenging decision to administer intravenous thrombolysis despite a high initial NIHSS score.

Methods:
A young man with known rheumatic heart disease and active smoking experienced sudden loss of consciousness, followed by global aphasia with preserved motor function. His initial NIHSS score was 31. Given his young age and suspected cardioembolic large vessel occlusion, intravenous alteplase was initiated as a bridge to potential mechanical thrombectomy. The thrombolysis proceeded without complications; the NIHSS improved to 20 at 24 hours. CT confirmed a left fronto-parietal MCA infarction. CTA revealed the thrombus in the distal M4 segment of the left MCA, precluding mechanical thrombectomy.

Discussion:
Intravenous thrombolysis is often used cautiously in patients with NIHSS scores exceeding 25, due to limited evidence of significant benefit. This case illustrates its application as a bridging strategy in a young individual with suspected large vessel occlusion. The distal M4 thrombus on CTA, which prevented mechanical retrieval, highlights the importance of rapid, precise vascular imaging in guiding acute stroke therapy. While thrombolysis is a primary treatment for eligible patients, mechanical thrombectomy offers better outcomes for proximal large vessel occlusions. This case reminds us of the limitations of current reperfusion strategies when thrombi are distally located.

Conclusion:
In young patients with suspected large vessel occlusion, intravenous thrombolysis may be considered despite a high NIHSS score, particularly when mechanical thrombectomy is being evaluated. Rapid, detailed vascular imaging is crucial to determine thrombectomy eligibility. When distal embolization precludes mechanical thrombectomy, the benefits of thrombolysis may be limited.

EP_C_32

E-Poster Clinical

A CASE REPORT: MULTIPLE SCLEROSIS MASQUERADING AS ACUTE STROKE IN A TEENAGE GIRL

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Introduction:
Acute stroke, typically from vascular events, presents with sudden focal neurological deficits. However, conditions like multiple sclerosis (MS), with inflammation-driven demyelination, can mimic these symptoms. This report details a case of a 16-year-old girl presenting with stroke-like symptoms, ultimately diagnosed with MS. The case highlights diagnostic challenges, especially when initial findings like a non-corrected mixing test suggest alteative diagnoses such as antiphospholipid syndrome (APLS).

Methods:
A teenage girl on oral contraceptives for irregular menses presented with unilateral weakness, numbness, and speech loss. Neurological examination revealed expressive aphasia, multiple cranial nerve involvement (right Cranial Nerves V, VII, IX, X, XI, XII), and reduced power in the right limbs. Reflexes were brisk, without sensory or cerebellar signs. CT showed communicating hydrocephalus, but no infarction or vascular abnormalities. MRI revealed signal changes in the left frontal lobe and C1 spinal cord, raising suspicion for subacute infarction or demyelination. A prolonged, non-corrected APPT prompted APLS testing, and the anti-nuclear antibody result was negative. Neurology consultation led to an MS diagnosis.

Result:
The absence of typical stroke risk factors, combined with the patient's young age and female sex, raised early suspicion for an autoimmune aetiology such as MS. The case highlights the difficulty in distinguishing between acute stroke and MS, both clinically and radiologically. MS can manifest as pseudostroke in this case, misleading initial results like the non-corrected mixing test further complicated the diagnosis.

Conclusion:
This case emphasizes the diagnostic complexity of multiple sclerosis (MS), particularly in patients presenting with atypical, stroke-like symptoms. It is important to consider MS in young patients without stroke risk factors. Prompt MRI and a high level of suspicion are crucial for accurate diagnosis, to ensure timely MS treatment and improve long-term outcomes.

E-Poster:

Non-Clinical

EP_NC_01

E Poster Non-Clinical

ACCEPTABILITY, ABILITY, AND WILLINGNESS TO USE THE "CAKNASTROK" MOBILE HEALTH APPLICATION FOR POST-STROKE CAREGIVERS IN MALAYSIA: A PROTOCOL FOR A MIXED-METHODS STUDY

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Introduction:
Mobile health (mHealth) applications have transformed healthcare delivery, particularly for chronic disease management. In Malaysia, stroke remains a leading cause of disability, with care primarily provided by family members who face significant physical, emotional and financial burdens without adequate support systems. The "CaknaStrok" mHealth application, developed by Universiti Sains Malaysia, addresses these challenges by providing essential resources, facilitating healthcare provider communication and supporting daily caregiving tasks for stroke caregivers.

Objectives:
This study aims to comprehensively assess stroke caregivers' acceptability, ability, and willingness to use the "CaknaStrok" mHealth application in Malaysia. Specifically, we will evaluate caregivers' perceptions of user-friendliness and usefulness, assess their digital literacy skills, and determine factors influencing their intention to adopt and continue using the application while identifying context-specific barriers and facilitators.

Methods:
This research employs a sequential mixed-methods design in two phases. Phase 1 consists of a cross-sectional survey with 270 primary stroke caregivers using validated instruments, including measures based on the Unified Theory of Acceptance and Use of Technology (UTAUT), to quantitatively evaluate app usability and acceptability. Phase 2 involves in-depth interviews with purposively selected experienced caregivers to qualitatively explore contextual challenges, cultural factors and personal experiences influencing app engagement.

Results:
Expected outcomes include a comprehensive understanding of Malaysian stroke caregivers' digital literacy levels, usability perceptions and adoption intentions. The study will identify sociodemographic factors, technological barriers and cultural elements that impact mHealth utilization in this unique caregiving context.

Conclusion:
Findings will guide the refinement of culturally appropriate mHealth interventions for stroke caregivers, inform digital health literacy programs and potentially influence healthcare policies regarding technological support for informal caregivers in Malaysia. This research addresses a critical gap in understanding how digital health tools can be effectively implemented to support vulnerable caregiver populations in middle-income countries.

EP_NC_02

E-Poster Non-Clinical

DEVELOPMENT OF THE CAKNASTROK MODULE: A COMPREHENSIVE EDUCATIONAL INTERVENTION FOR STROKE CAREGIVERS IN MALAYSIA

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Background:
Effective post-stroke care hinges on informed and empowered caregivers. However, many informal caregivers feel unprepared for the demands of supporting stroke survivors at home. In response to this gap, the CaknaStrok Module was developed as a culturally appropriate, structured educational tool aimed at improving caregiver knowledge, skills, and confidence in stroke care within the Malaysian context.

Objective:
To develop the CaknaStrok Module through a structured, evidence-based process and evaluate its usability among informal stroke caregivers.
Methods:
The development followed a three-phase mixed-methods approach:

Needs Assessment - A literature review and qualitative interviews with caregivers and healthcare providers were conducted to identify the key challenges and informational needs of caregivers.
Content Development - Stroke caregiving practices were translated into a bilingual (Malay-English) user-friendly module using simplified language and visual aids. The final module consists of two components: a printed caregiving booklet and a mobile application.
Expert Validation - A multidisciplinary panel (neurologists, rehabilitation specialists , therapist,and nurses, as well as caregivers) reviewed the content for accuracy, cultural relevance, and usability.

Following development, usability was evaluated with 75 caregivers using the System Usability Scale (SUS) for the mobile app . Data were analyzed using descriptive statistics.

Results:
The final module consists of seven core sections covering stroke basics, rehabilitation guidance, emotional support, and the use of assistive tools. In usability testing, the mobile app achieved a mean SUS score of 83.5 (SD ± 6.2), reflecting excellent usability.

Conclusion:
The CaknaStrok Module is a rigorously developed and highly usable educational tool tailored for informal stroke caregivers in Malaysia. Its integration into community and primary care settings holds significant potential for improving caregiver preparedness and post-stroke rehabilitation outcomes. Future directions include expanding the digital adaptation through the CaknaStrok mobile app and conducting broader implementation studies.

EP_NC_03

E Poster Non-Clinical

EVALUATION OF KNOWLEDGE AND AWARENESS TOWARDS STROKE AMONG KLANG VALLEY RESIDENTS

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Introduction:
Stroke is a life-threatening condition that causes significant fatalities both in Malaysia and globally. Public awareness and knowledge about stroke are crucial for reducing the healthcare burden and mitigating the risk of stroke.

Objective:
To explore the level of knowledge and awareness about stroke among the public in Klang Valley.

Methods:
Data for this cross-sectional study were collected from March to April 2024 using a validated questionnaire based on a previous study among Klang Valley residents aged 18 to 64. The questionnaire consists of two sections: Section A collects data based on demographic characteristics, and Section B requires respondents to respond to statements about their awareness and knowledge of stroke. The data collected were analyzed using IBM SPSS Statistics version 29. A descriptive analysis was conducted to report on the frequency of demographic characteristics of the respondents, awareness, and knowledge of stroke.

Results:
Most respondents were female (51.40%), with 97.80% having heard about stroke. The most recognized symptoms of stroke among respondents were sudden numbness or weakness of the body (77.00%) and problems with coordination (68%). More than half of the respondents were able to identify the risk factors for stroke: irregular heartbeat (63.80%), alcohol consumption (59.40%), stress (57.20%), and lack of exercise (54.20%). The majority of the respondents (88.60%) agreed that prompt action is required if someone has a stroke. Out of the 500 participants surveyed, 127 (25.4%) demonstrated good knowledge, 314 (62.8%) had moderate knowledge, and 59 (11.8%) had poor knowledge.

Conclusion:
The majority of Klang Valley residents show a moderate level of knowledge and awareness towards stroke. Continuous efforts are needed to maintain and enhance stroke awareness and knowledge among the public in Klang Valley through effective educational interventions aiming to reduce stroke incidence and mortality rates.

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