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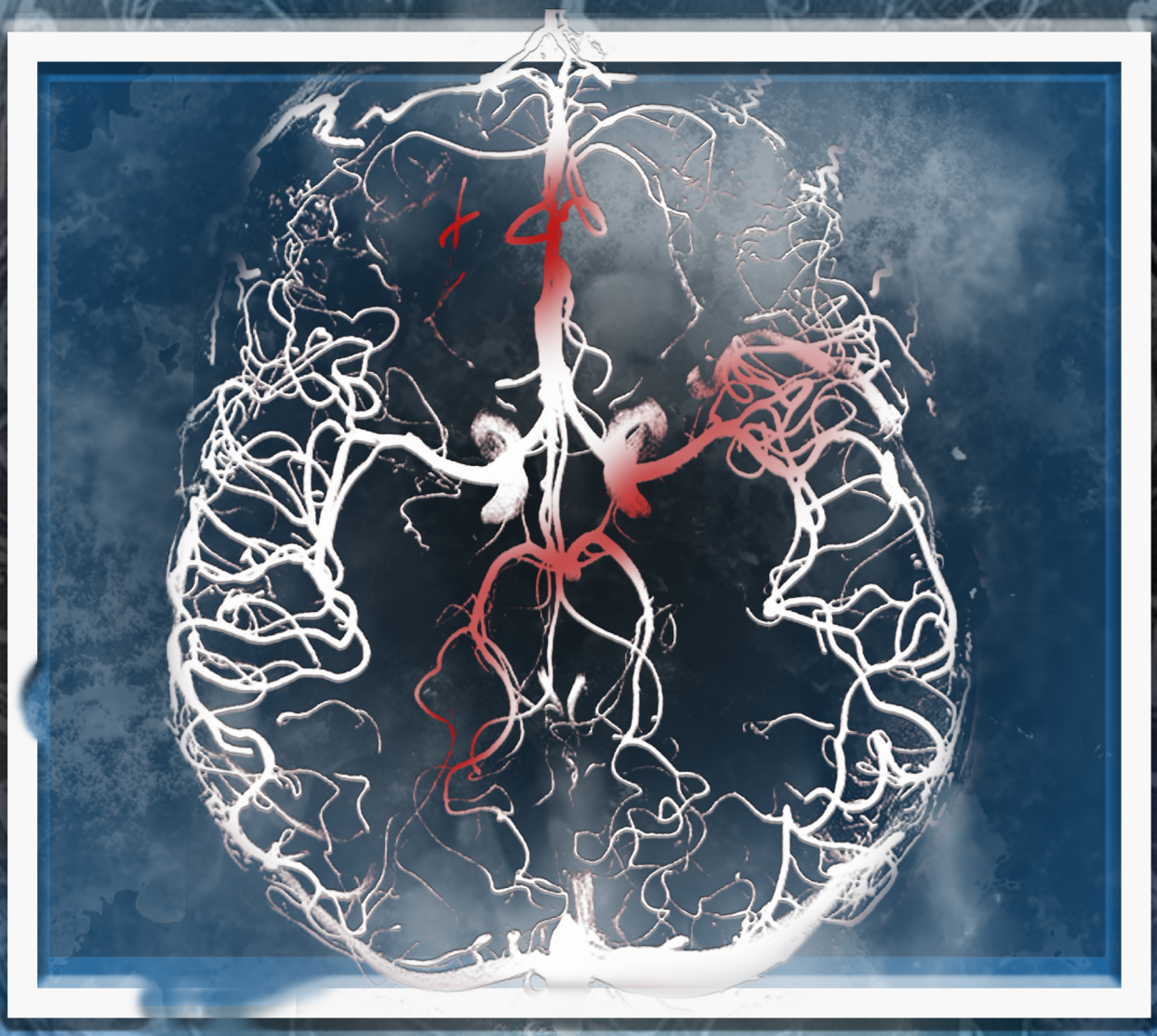

MSC virtual E-abstract: E-Poster Presentation-Clinical), E-Poster Presentation–Non-Clinical, Oral Presentation–Clinical, Oral Presentation–Non-Clinical.

Imaging of Acute stroke patient with Covid-19: A serial case.

The “Butterfly wings” and midbrain “V” sign of Artery of percheron infarction.

Unilateral loss of the swallow tail sign in a patient with Idiopathic Parkinson’s disease.

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A MALAYSIAN SINGLE CENTRE EXPERIENCE OF NOAC EFFICACY SAFETY AND FOR STROKE PREVENTION IN NVAF

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ABSTRACT

Background: In non-valvular atrial fibrillation (NVAF), oral anticoagulant has been shown to reduce the risk of cardioembolic stroke. RCTs have shown non-inferiority or superiority of novel oral anticoagulants (NOAC) to the vitamin K antagonist, warfarin. Four NOACs have been approved for treatment of AF but only 3 are available in Malaysia: apixaban, dabigatran and rivaroxaban.

Objective: To compare the stroke outcome and bleeding rate of apixaban, dabigatran and rivaroxaban in NVAF.

Methods and study design: Single center retrospective with prospective follow-up study. All patients who were prescribed NOACs from January 2011 onwards were identified from the UKM Medical Centre (UKMMC) online pharmacy system and eligible patients who were vitamin K naïve were recruited using convenience sampling based on inclusion and exclusion criteria. They were followed up from 2011 to 2020. Patient data was obtained from their medical records and outcomes were determined from these records and/or phone visits. The first onset of stroke after initiation of NOACs will be taken as final efficacy outcome. Safety outcome was any significant bleeding event. Approval from the ethical standards committee of UKMMC was received.

Results: A total of 235 patients were included in the study and fell into six different treatment groups: dabigatran 150 mg bd, dabigatran 110 mg bd, rivaroxaban 20 mg od, rivaroxaban 15 mg od, apixaban 5 mg bd, and apixaban 2.5 mg bd. Type and dosage of NOACs prescribed determined by the treating physician according to clinical suitability. Eighteen stroke events occurred throughout the study period. Survival analysis, using Kaplan-Meier curve and log rank test, showed that there was no significant difference in survival among all treatments groups ($p = 0.46$) but there was an increase of stroke events in patients with non-aspirin NSAID exposure ($p<0.05$ and HR 6.19 at 95% CI [1.363-28.166]). There was no significant difference in bleeding rate (gastrointestinal bleeding, intracranial bleeding or other bleeding events).

Conclusion: We conclude that all treatments group had similar cumulative proportion of stroke survival at the end of the study regardless of NOAC type or dose. This study showed no difference in bleeding outcome in the treatment groups. We find it reassuring that lower and higher doses appeared to be equally efficacious regardless of NOAC types.

AN OBSERVATIONAL STUDY ON THE OVERVIEW OF YOUNG STROKE PATIENTS

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ABSTRACT

Introduction: Stroke has been known as a disease of aging [1] but there is a recent trend of rising stroke incidence at a younger age. This will likely have a great public health impact since stroke in younger patients carries the potential for a lifetime of disability.[2] Risk factors profile, stroke types, severity, and outcomes in young adults are different from those in older patients.[3] This study was conducted to explore the characteristics of young stroke patients in Hospital Seberang Jaya, Penang.

Methods: There were 1373 patients recruited from the National Neurology Registry of Hospital Seberang Jaya who were patients between January 2013 and December 2018. All the data were presented with descriptive analysis.

Results: The mean (SD) age for young adults was 38.7 (0.4), while for older adults it was 63.9 (0.3). Both age groups had over 60% male stroke patients. Ischaemic stroke accounted for the highest number in both age groups and over 70% of them showed lacunar cerebral infarct as the most common ischaemic subtype. Hypertension was the most common risk factor (70.4%) in older adults, while second in younger adults (56.2%). Smoking was the most common risk factor (63.5%) in younger adults, while smoking in older adults was noted to be the third most common risk factor (43.2%). Younger adults had better scores on clinical indicators on presentation and on discharge, compared to older adults, thus had more favourable outcomes. Both age groups had over 90% of patients survive on discharge, slightly higher in younger adults (95.6%).

Conclusion: Understanding on the demographic patterns and risk factors of different age groups in stroke patients is needed to have a more targeted and specified prevention model. More studies on young stroke patients are needed to understand and reduce the impact of stoke on the patients' health and to reduce the burden on the healthcare system.

AN OVERVIEW OF STROKE PATTERNS FROM A STROKE READY HOSPITAL

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ABSTRACT

Introduction: Stroke is one of the dominant causes of death and disability globally. Stroke incidence in Malaysia is reported as 67/100,000 person-years.[1] It is a major burden on the healthcare system, is the third leading cause of death, and among all disabling diseases it had the nation's highest disability rate.[2] This study was conducted to determine the stroke patterns in Hospital Seberang Jaya, Penang.

Methods: Data was obtained from the National Neurology Registry of Hospital Seberang Jaya, Penang, on 1373 stroke patients between January 2013 and December 2018. We used the descriptive analysis method to present the data.

Results: The mean age was 61.62 years ± 12.517, with a preponderance of males (62.9%) and those of Malay ethnicity (53.7%). Out of the entire sample, 77.9 % presented with first stroke. We identified 80% of the cases were ischaemic stroke (lacunar cerebral infarct, LACI 50.3%) and 11.6% were haemorrhagic stroke. Hypertension was the most common risk factor (69.2%), followed by diabetes mellitus (43.8%), hyperlipidaemia (15.5%), smoking (15.4%), and ischaemic heart disease (8.4%). The average number of days of hospitalization in median (IQR) was 2(3) days and the in-hospital mortality rate was 5.8 %.

Conclusion: When compared to other nations, Malaysia has room for improvement. Measures are needed for stroke prevention to reduce cardiovascular burdens and healthcare resources for stroke care need to be increased to ensure better stroke management.

MORTALITY AFTER STROKE: A 9-MONTH OBSERVATIONAL STUDY

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ABSTRACT

Introduction: According to the Malaysian Burden of Disease and Injury Study 2009-2014, the biggest killer in 2014 was cerebrovascular disease, particularly stroke, which contributed 15.2% of the total deaths in Malaysia.(1) The aim of this study is to determine the stroke mortality of patients admitted to Hospital Seberang Jaya, a primary stroke centre in Penang.

Methods: We performed an observational study of patients with stroke who were admitted to Hospital Seberang Jaya from July 2020 to March 2021. Those patients were followed by post-stroke telephone calls 30 days after discharge and monthly thereafter. During the phone call, patients were asked if their stroke symptoms were resolved.

Results: During the 9-month study period, there were a total of 160 patients with stroke. During the follow-up period, it was determined that 143 (89%) patients were living and 17 (11%) patients were deceased. Of the 17 deceased patients, 15 had ischaemic stroke, 1 had haemorrhagic stroke and 1 had transient ischaemic attack. Among the 15 patients with ischemic stroke, 1 patient was given thrombolysis with an intravenous recombinant tissue plasminogen activator.

Conclusion: Post-stoke management is important since stroke is associated with an increased risk of death over time. Better stroke prevention and management could lead to a higher long-term survival rate.

References:

1. Malaysian Burden of Disease and Injury Study 2009-2014
http://iku.moh.gov.my/images/IKU/Document/REPORT/BOD/BOD2009-2014.pdf

THE CHARACTERISTICS OF POST-STROKE PATIENTS FROM HOSPITAL SEBERANG JAYA

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ABSTRACT

Introduction: Following a stroke, a variety of issues may arise. The majority of them are normal and will get better with time but some will indicate a serious condition. Therefore, monitoring the condition of post-stroke patients is crucial. Reaching post-stroke patients over the phone is much easier than face-to-face interviews (1).

Methods: We made telephone calls to post-stroke patients from Hospital Seberang Jaya. We looked at six months of data from July to December 2020. We used descriptive analysis to present the data obtained during the study period.

Results: There were 114 stroke patients. Among them, 68 patients were male (60%) and 46 patients were female (40%). The mean (SD) age of the patients was 59 (13.3). Ethnically, the majority were Malays 57 (50%), followed by Chinese 36 (32%) and Indians 21 (18%). Hypertension is the main risk factor. We identified 78 (75.7%) patients had hypertension, 33 (32.0%) of them had diabetes mellitus, 34 (33.0%) had dyslipidaemia, 20 (19.4%) had ischaemic heart disease, and 7 (6.8%) had atrial fibrillation. Less than half of the patients, 52 (45.6%) were smokers and 9 (7.9%) were alcoholics. Among the patients, 86 (81.1%) had ischaemic stroke, 15 (14.2%) had transient ischaemic stroke, and 5 (4.7%) had haemorrhagic stroke.

Conclusion: Since social distancing is one of the most important measures to curb the spread of infection, especially during the COVID-pandemic, follow up by telephone is important. It is a feasible and cost-effective way to monitor post-stroke patients in order to detect any deterioration in the patient's condition.

References: Wan, L. H., X. P. Zhang, M. M. Mo, X. N. Xiong, C. L. Ou, L. M. You, S. X. Chen and M. Zhang (2016). "Effectiveness of Goal-Setting Telephone Follow-Up on Health Behaviors of Patients with Ischemic Stroke: A Randomized Controlled Trial." J Stroke Cerebrovasc Dis 25(9): 2259-2270.

THE IMPACT OF COVID-19 PANDEMIC ON ACUTE STROKE CARE: AN EXPERIENCE FROM A PRIMARY STROKE CENTRE IN MALAYSIA

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ABSTRACT

Introduction: The COVID-19 pandemic had a profound impact on medical care services, necessitating significant service reorganisation to ensure patient continuity [1]. According to recent reports, the outbreak had some detrimental effects on acute stroke treatment, resulting in a substantial decrease in stroke admissions and recanalisation therapies [2,3]. We sought to investigate the impact of the COVID-19 pandemic on acute stroke care at a primary stroke centre in Malaysia.

Methods: We only included adult ischaemic stroke patients in this study. Variables of the study included the number of ischaemic stroke patients, the number of recanalisation therapies, and the number of COVID-19 cases in Malaysia between March 2020 and September 2020. Pearson's or Spearman's correlation analyses were performed to determine the strength of association between two variables and the direction of the relationship.

Results: There is a significant positive correlation between the number of ischaemic stroke patients and those receiving acute recanalisation therapy during the COVID-19 period ($r = 0.791$, $P = 0.034$). The increased number of ischaemic stroke patients shows no significant correlation with COVID-19 cases ($r = -0.306$, $P = 0.504$). A similar trend was also observed for acute recanalisation therapy with COVID-19 cases ($r = -0.072$, $P = 0.878$).

Conclusion: There was a strong positive correlation between the number of ischaemic stroke patients and those receiving acute recanalisation therapies during the COVID-19 period. More research is needed to assess the acute stroke care in the rapidly evolving COVID-19 pandemic in order to provide high-quality care while minimising the risk of COVID-19 infection.

YOUNG STROKE ON PREVALENCE OF EPIDEMIOLOGICAL FACTORS, STROKE SUBTYPES AND STROKE EVENTS - AN OBSERVATIONAL STUDY

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ABSTRACT

Introduction: There is a trend toward increasing stroke incidence at younger ages. This is of great public health significance because strokes in younger patients carry the potential for a greater lifetime burden of disability and some of the potential causes that have been identified as possible contributors to this trend are modifiable.[1] Heterogeneity in incidence rates, stroke subtypes, and aetiology among younger stroke patients in both developed and developing countries is often noted.[2] This study was conducted to provide an overview of stroke among young people in Hospital Seberang Jaya, Penang, detailing stroke types and stroke events.

Methods: We recruited 1373 patients from the National Neurology Registry of Hospital Seberang Jaya who were treated between January 2013 and December 2018. Descriptive analyses were performed to determine the characteristics of the patients.

Results: In this study, stroke in young adults encompassed 8.8% of the study population, while stroke in older adult constituted the majority, of 90.2%. We noticed that in more recent years, the age at presentation for ischaemic and haemorrhagic stroke had been dropping, involving more younger adults. The youngest ages were noted in the year 2018. The youngest age was 23 years old and 20 years old for ischaemic and haemorrhagic stroke patients respectively. Over the last few years, the age for stroke events had also been dropping, with the youngest age noted in the year 2018: 20 years old for the first-ever stroke and 32 years old for recurrent stroke.

Conclusion: Stroke in younger adults had a slight rise in the last few years, involving not only more young adults, but also younger patients. More studies on young stroke are needed to understand and reduce the negative health impacts and burden to society.

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HICCUPS: AN ATYPICAL PRESENTATION OF LATERAL MEDULLARY SYNDROME

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ABSTRACT

Background: Persistent hiccup related to lateral medullary syndrome is rarely reported as usually it resembles other gastrointestinal abnormality. It is often overlooked and can cause aspiration pneumonia.

Methods: We report a case of an elderly man who presented with persistent hiccups and later diagnosed to have lateral medullary syndrome.

Results: 73-year-old Malay male presented with desaturation and persistent hiccups. On further history, he complained of giddiness, right sided body weakness and recurrent choking episode. On clinical examination, he was found to have right sided Horner syndrome, right ataxia and left sided sensory loss and dysphagia. CT Brain showed multifocal lacunar infarctions. Due to suspicious of posterior circulation stroke, urgent MRI was done and showed features of acute right lateral medullary infarction with small haemorrhagic transformation most likely due to arterial thrombus within the right vertebral artery. He was treated for ischemic stroke and aspiration pneumonia.

Conclusion: Persistent hiccups is one of unique presentation that can occur in a case of lateral medullary syndrome. It was postulate that there is denervation super sensitivity due to palatal myoclonus in this group of patients.

OUCH, WE BE BURNIN' YA: A CASE REPORT ON CENTRAL POSTSTROKE PAIN SYNDROME - DEJERINE-ROUSSY SYNDROME

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ABSTRACT

Introduction: Dejerine Roussy syndrome defined by painful paraesthesia in any part of the body usually coupled with sensory abnormalities which occurs days to years after infarction of the ventroposterolateral thalamus.

Case Presentation: 53 years old man wheeled in with unusual grievance of hyperaesthesia and increased pin prick sensation even on innocuous stimulus such as touch. He has been known to have dyslipidaemia and stroke. He presented with worsening numbness and sharp pain over bilateral upper limbs and lower limbs, more prominent over the left side of the body past one week and unable to walk past one day. Upon examination, patient's GCS 15/15, blood pressure was 148/94mmHg with HR 80, RR 20, temperature 36.8° and P/S 6/10. He had left sided hyperesthesia exaggerated pain on light touch and power of left side upper and lower limb 3/5. Patient was given IV Tramadol. CT scan revealed right-sided infarct in the internal capsule. His left-sided hyperesthesia was attributed to thalamic stroke. Over the next 5 days in ward, he reported decrease in his left sided discomfort after initiation of amitriptyline in conjunction with tramadol.

Discussion: Dejerine-Roussy syndrome can occur due to disruption of the somatosensory at any level such as the thalamus, medulla, or cerebral cortex and causes numbness and tingling occurs weeks to months later. Diagnosis should be done with exclusion of other possible causes of pain. The management includes amitriptyline (tricyclic antidepressants), lamotrigine, gabapentin, pregabalin, carbamazepine, and phenytoin (anticonvulsants). Opioids can be used if antidepressants and anticonvulsants are not effective. TENS effective in combination with social support and family education.

Conclusion: Central post-stroke pain is usually the foremost limiting symptom after their stroke, chronic, and may be life-long even if treatment given earlier. Prompt recognition and accurate diagnosis in emergency department will allow early commencement of definitive management such as amitriptyline or gabapentin which will reduce morbidity of this patient.

STROKE SEVERITY, ONSET-TO-DOOR TIME, DOOR-TO-NEEDLE TIME COMPARISON: PRE & DURING COVID19 ERA IN A DISTRICT HOSPITAL

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ABSTRACT

Introduction: The current COVID19 pandemic had caused a significant impact to the healthcare system and stroke care worldwide. Less patients had presented to hospital within stroke golden hour due to fear of COVID19.

Objective: To compare the stroke severity, onset-to-door time (ODT), door-to-imaging time (DIT), door-to-needle time (DNT) of ischaemic stroke patients during the pre and COVID19 era at Seberang Jaya Hospital.

Methods: This is a retrospective cross-sectional study of acute ischaemic stroke patients who had received intravenous thrombolysis (IVT) at Seberang Jaya Hospital from March 2019 to February 2020 (Pre-COVID19), and from March 2020 to February 2021 (during COVID19 Era). Data was extracted from the medical records and National Stroke Registry.

Results: A total of 20 and 53 ischaemic stroke patients had received IVT during pre-COVID19 and COVID19 era respectively. Mean NIHSS upon admission was 11.76 (SD = 5.23) for pre-COVID-19 era, and 14.4 (SD = 5.65) for COVID19 era. The mean ODT was 92.96 (SD = 44.65) minutes for pre-COVID19 era, and 116.86 (SD = 58.83) minutes for COVID19 era. The mean DIT was 29.05 (SD = 14.44) minutes for pre-COVID19 era, and 24.03 (SD = 21.92) minutes for COVID19 era. The mean DNT was 91.65 (SD = 33.71) minutes for pre-COVID19 era, and 73.77 (SD = 37.6) minutes for COVID19 era.

Conclusion: Our study showed an increase in stroke severity, and also a longer ODT in the COVID19 era. However, the acute stroke care services were not affected in our center.

INTRAVENOUS THROMBOLYSIS IN ACUTE STROKE IN STROKE READY HOSPITALS WITHOUT NEUROLOGISTS: BENEFICIAL EFFECTS IN NIHSS AND MRS IMPROVEMENTS

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ABSTRACT

Introduction: We explore the safety and effectiveness of intravenous thrombolysis (IVT) among multi-ethnic Asian stroke patients when administered by Physicians in acute stroke ready hospitals (ASRHs) without in-house neurologists.

Methodology: We conducted a multi-centre, periodic cross-sectional study involving analysis of real-world data. All available ASRHs in Malaysia were included. Clinical data of consecutive patients (January 2014-March 2021) who received IVT within 4.5 hours from stroke onset was collected through review of medical records. Patients who received other reperfusion therapies within 90 days following IVT were excluded. Post-IVT NIHSS and mRS trends were analyzed using Friedman test, followed by Wilcoxon signed-rank test continually and post-hoc test with Bonferroni correction for multiple comparisons. Univariate and multivariate regression models were employed to identify the factors associated with various clinical outcomes following IVT

Results:
Eighty-two multi-ethnic Asian adults (mean age: 56.4±12.6 years, median NIHSS: 12 (9-16) at presentation) were included. IVT conferred both short term (significant improvements in NIHSS for up to 7 days) and longer term (significant improvements in mRS for up to 3 months) benefits, on top of the fair efficiency of service delivery (median door-to-needle time: 93 (60-125) minutes) and safety profile (acceptable rates of haemorrhagic complications). Forty (48.8%) patients recorded favourable functional outcomes with mRS≤1 at 3 months post-IVT. Such improvements were associated with younger age, female gender, shorter door-to-needle time, yet not significantly influenced by ethnicity. Factors associated with poor functional outcomes, intracranial haemorrhages, and mortality include older age and longer door-to-needle time.

Conclusions: Despite a multitude of multifaceted challenges/limitations in logistics, healthcare facilities, and human resources, it is still possible, provided with concerted efforts to work within the confines of these limitations in addition to strict adherence to evidence-based protocol, to provide beneficial stroke thrombolysis service safely and fairly efficiently, even in resource-limited non-stroke centres without neurologists.

ACUTE INSPIRATORY STRIDOR AS AN UNUSUAL PRESENTATION OF BRAINSTEM STROKE

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ABSTRACT

Introduction: Respiratory stridor caused by central aetiologies are uncommon but may lead to life-threatening consequences to the patients. Here, we report a case of brainstem ischemia presented with weakness and acute inspiratory stridor.

Case Presentation: A 56 years old gentleman with underlying diabetes mellitus, hypertension and dyslipidaemia presented with sudden onset giddiness and a fall. Upon arrival, he was unable to speak but can follow simple commands with presence of left sided weakness. Initial CT brain was normal. Intravenous thrombolysis was initiated, unfortunately he developed worsening stridor and was intubated for airway protection. The thrombolytic therapy was halted due to concern of reaction towards alteplase. Reassessment post stabilization revealed ophthalmoplegia with loss of brainstem reflexes. Subsequent MRI revealed restricted diffusion involving pons, midbrains, superior cerebral peduncle, both thalamus, left parietal and both cerebellum; likely due to posterior circulation thromboembolic phenomenon.

Discussion: Inspiratory stridor as manifestation of ischaemic stroke is rare as this is caused by bilateral disruption of the supply to the recurrent laryngeal branch of the vagus. In the absence of any local cause and other signs of anaphylaxis reaction, central cause such as brainstem stroke should be considered as early intervention may improve survival and reduce associated neurological impairment.

Conclusion: Although uncommon, brainstem infarct should be considered in patients presenting with acute inspiratory stridor particularly in absent of obvious local causes. Early recognition and prompt treatment may improve patient's morbidity and mortality.

OVERVIEW OF ISCHEMIC STROKE MANAGEMENT FOLLOWING STROKE CODE ACTIVATION PATHWAY AT DISTRICT HOSPITAL

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ABSTRACT

Introduction: Most stroke patients are managed by non neurologist especially at district hospitals. The objective of this study is to study the clinical spectrum of ischemic stroke and its management in accordance to the 9 Key Performance Indicators (KPI) and patients outcome by Modified Rankin scale (MRS) following Stroke Code Activation Pathway under Penang Seberang Prai District Hospital Cluster System.

Methodology: Retrospective study conducted at Department of General Medicine Hospital Bukit Mertajam from May 2020 until May 2021. Inclusion criteria, patients aged more than 18-year-old with stroke symptoms within 4.5 hours from onset, wake up stroke and well-established infarction or normal non contrasted CT brain. Stroke symptoms beyond 4.5 hours from onset, stroke mimic symptoms and non contrasted CT brain shown hemorrhage or mass were excluded.

Results: A total of 51 patients recruited, 25 Malay, 17 Chinese, 8 Indian and 1 other race. Male 38 patients and female 13 patients with mean age of 60 (SD 14) years old. Mean Body Mass Index (BMI) 25.9 (SD 2.4). Premorbid risk factors are hypertension 44 patients 29.7%, Obesity 35 patients (23.6%), smoking 30 patients (20.3%), diabetes mellitus 24 patients (16.2%) and dyslipidemia 15 patients (10.1%). Those presented with limb weakness 38 patients (45.2%), slurring of speech or aphasia 17 patients (20.2%), facial asymmetry 16 patients (19%) and numbness 13 patients (15.5%). The median National Institute of Health Stroke Scale (NIHSS) is 3 range (0-7). The mean time for plain CT brain at referral hospital is 40 minutes (SD 3.5). Among the 9 KPI recommended by Stroke Council Malaysian Society of Neuroscience, we achieved 100% in performing ECG, swallowing test and stroke education. This is followed by 98% in antithrombotic therapy by end of hospital day two and discharged on cholesterol reducing medication respectively. Assessed for rehabilitation 94.1%, discharged on antithrombotic therapy 92.2%, 7.8% administered thrombolytic therapy and 3.9% had deep vein thrombosis therapy. The mean length of stay is 3 days (SD 1.3) with mean MRS of 1 (SD 0.9) upon discharge.

Conclusion: Early presentation to hospital with relatively low NIHSS will shorten length of hospital stay with good clinical outcome by MRS. The Stroke Code Activation Pathway has improving acute stroke care at District Hospital.

ONSET TO TREATMENT TIME OF ISCHAEMIC STROKE THROMBOLYSIS AND FUNCTIONAL OUTCOME IN A DISTRICT HOSPITAL

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ABSTRACT

Introduction: Thrombolysis with intravenous recombinant tissue plasminogen activator (IV-rTPA) is a gold standard and effective treatment in acute ischaemic stroke (AIS) patients who presented within 4.5 hours. Efficacy of IV-rTPA had been shown to be time dependent, however the influence of onset to treatment (OTT) time on functional outcome among AIS patients in local settings is uncertain.

Objective: We aimed to determine the association between OTT time and functional outcome among AIS patients thrombolysed with IV-rTPA in Seberang Jaya Hospital.

Methods: This is a retrospective cross-sectional study involving all AIS patients who were thrombolysed in Seberang Jaya Hospital from 2019 to 2020. Functional outcome was assessed using modified Rankin scale (mRS) after 3 months of treatment, and a score of 0-2 was categorized as good outcome whereas a score of 3-6 was considered as poor outcome respectively.

Results: Among 61 patients treated with IV-rTPA, the median OTT time was 195 minutes. More than half (57.4%) of thrombolysed patients were in 3-4.5 hours window. Patients who were thrombolysed in 3-4.5 hours period have higher percentage of poor outcome (n=35; 62.9%), followed by those thrombolysed in 2-3 hours (n=19; 47.4%) and 1-2 hours (n=7; 42.9%). This demonstrates that patients with earlier OTT time have better functional outcome although it is not statistically significant (P = 0.454).

Discussion and Conclusion: A shorter OTT time showed a better functional outcome among AIS patients in our centre. This study highlights the importance of prompt action in the management of hyperacute stroke.

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CASE REPORT: DUAL ANTIPLATELET IN CAPSULAR WARNING SYNDROME

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ABSTRACT

Introduction: Capsular warning syndrome (CWS) is defined as a recurrent stereotype transient lacunar syndrome. The mechanism and clinical management of CWS has not been extensively studied.

Case presentation: 56-year-old gentleman with hypertension, dyslipidaemia and diabetes mellitus had a sudden onset left-sided weakness associated with dysarthria. The Diffusion-weighted imaging (DWI)-Fluid Attenuation Inversion Recovery (FLAIR) Magnetic Resonance Imaging (MRI) of the brain revealed an area of restricted diffusion and match lesion in the right basal ganglia with normal magnetic resonance angiography (MRA). During the admission, he experienced fluctuating neurological episodes lasted up to four days before he developed permanent left limb weakness. Repeated MRI brain showed non-evolving basal ganglia infarct or new lesion. He received double antiplatelet (DAPT) – a combination of Aspirin and Clopidogrel for a duration of 4 weeks followed by single antiplatelet- Aspirin alone for lifelong. Upon discharge, his functional Modified Rankin Score (MRS) was four which improved to two at 90 days post stroke.

Discussion: The history and clinical findings of this case were classical of capsular warning syndrome (CWS). Common risk factors for CWS are hypertension, dyslipidaemia, diabetes, and smoking, which suggest that atherosclerosis may be associated with CWS pathogenesis. There were few case reports which highlighted the effectiveness of DAPT in the treatment of CWS. One case series reported that two CWS patients, had no symptoms progression following DAPT while another retrospective study found that DAPT was associated with improved functional outcomes and decreased clinical fluctuations. Moreover, Kawano et al. addressing the loading dose of clopidogrel combined with other antithrombotic therapy may be an effective treatment for CWS. In summary, we report a case of CWS with fluctuating neurological symptoms showing consistent and favourable outcomes at 90 days of treatment with DAPT. In the light of this single case report, we would suggest a randomized control study to clarify the role of DAPT as one of the important therapeutic options for CWS patients.

ANXIETY, DEPRESSION AND OCCUPATIONAL PARTICIPATION OF STROKE SURVIVORS

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ABSTRACT

Introduction: Anxiety and depression are common emotional consequence of stroke survivor, and it affects their ability to participate in everyday life activities. This study examines the level of anxiety and depression of stroke survivors and its relationship on occupational participation.

Methods: Upon ethical approval, a cross-sectional study was conducted on stroke survivors, recruited from Hospital Sungai Buloh, Malaysia. Data were collected from stroke survivors (n=68) using Hospital Anxiety and Depression Scale (HADS) and Occupational Participation Questionnaire (OPQ). The OPQ has four domains of perceived occupational participations activities which include Instrumental activity of daily living (IADL); social; leisure and work activities. Data were analysed using Pearson correlation test of Statistical Package for the Social Sciences (SPSS 22.0).

Results: Majority of stroke survivors shown mild level of anxiety (36.8%) and mild level of depression (22.1%). Both anxiety and depression have negative correlation with occupational participation [IADL ($\rho<0.001$, r=-0.59); leisure ($\rho<0.001$, r=- 0.38); social ($\rho<0.001$, r=-0,53) and work ($\rho<0.001$, r=-0.62)]; [$\rho<0.005$, r=-0.50; $\rho<0.0053$ r=--0.44; $\rho<0.001$, r=-0.57; $\rho<0.001$, r=--0.58)]. The findings suggest that higher level of anxiety and depression will reduce occupational participation activity in IADL, social, leisure and work.

Conclusion: Anxiety and depression have significant implication in reducing activities of stroke survivors in IADL, social, leisure and work. Thus, evidence to occupational therapists to assess and intervene psychological aspect of stroke survivors.

ATRIAL FIBRILLATION IN HYPERTENSIVE PATIENT WITH PRIOR STROKE- A CASE REPORT

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ABSTRACT

Introduction: Atrial fibrillation is prevalent in about 1% of the world population. It is associated with a significant increase in thromboembolic complications such as stroke which can significantly decline the quality of life, cognitive function and increase rates of mortality and morbidity. Hypertension is a major risk factor for atrial fibrillation, due to cardiovascular remodelling.

Case report: A 60 years old male who is a non-smoker with hypertension, presented with sudden onset left hemiparesis and facial nerve palsy. Serial ECGs showed intermittent atrial fibrillation. Non-contrasted Computed tomography (CT) brain showed right corona radiata infarction. ECHO showed LVEF 50%, mild dilated left atrium and no thrombus. Electrolytes and thyroid function tests were normal. He was then initiated on oral anticoagulant.

Discussion: Atrial fibrillation is a major risk factor for ischemic stroke. All patients with stroke require a 12-lead electrocardiogram. Documentation of atrial fibrillation is required to initiate anticoagulant therapy after ischemic stroke. However, atrial fibrillation detected after stroke was most often asymptomatic and paroxysmal. Atrial fibrillation detected after stroke is most frequent within the first day after stroke, usually short lasted and low burden atrial fibrillation. Therefore, prolonged monitor for example serial ECGs, Holter monitoring or loop recorder seems reasonable in all survivors of an ischemic stroke without an established diagnosis of atrial fibrillation.

Conclusion: Patient with paroxysmal atrial fibrillation in the presence of risk factors should be regarded as having a stroke risk similar to those with persistent or permanent atrial fibrillation. The search for atrial fibrillations should be intensified in patient with prior stroke as has therapeutic and preventive implications.

RADIOLOGY WORKFLOW EFFICIENCY IN MANAGING STROKE PATIENT DURING PANDEMIC COVID-19: EARLY EXPERIENCE IN A TEACHING HOSPITAL

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ABSTRACT

Introduction: Our stroke services were started on April 2020 during early pandemic of Covid-19 and it has created a tremendous strain among us. With rising number of Covid-19 cases, the stroke service continued as usual. "Time is brain" concept remains. Delays in providing treatment should be minimized. Safety requirements for prevention of Covid-19 infection are mandatory to be followed by the team.

Methods/ Procedure Details: All stroke patients will be considered as "positive Covid-19". Upon receiving patient for the imaging, the radiology personnel (doctors, radiographers, nurses, paramedics) were equipped with personal protective equipment (PPE). Minimum number of staff attending patient should be planned to minimize risk of infection. MRI was used as first line imaging tools to diagnosed acute ischemic stroke. IV thrombolysis will be given if indicated during MRI. When the decision for thrombectomy was made, other team members will start preparing the angiography room to avoid delays. Patient will be immediately pushed to angiography suite after MRI and receiving staff should be wearing full covered PPE. Patient will be placed in isolation room in intensive care unit post thrombectomy. All the facility used by patient must be disinfect immediately after done procedure.

Results: There were 25 thrombectomies evaluated. Fast preparation upon receiving patient with unknown status of Covid-19 and clear workflow among team members could improve decision to puncture time. The average door to puncture time however still poor as the delay mainly due to financial related disruption and not due to preparation of the protective equipment.

Conclusion: Even pandemic covid-19 has given us greater challenge, time of patient receiving treatment for thrombolysis and/or thrombectomy should not be delayed. Clear workflow and fast preparation should be emphasized as it helps in reducing time resulting effective treatment plan for acute ischemic stroke patient with safety precautions.

ARE THERE MISSED OPPORTUNITIES IN REDUCING RISK OF RECURRENT CARDIOVASCULAR EVENT AMONG STROKE SURVIVORS LIVING IN THE COMMUNITY?

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ABSTRACT

Introduction: Stroke survivors are at the highest risk of stroke recurrence within 90 days post-discharge, but the risk remains high up to 10 years after the initial stroke event (Mohan 2011). This study aims to assess missed opportunities in the long-term risk reduction strategies among stroke survivors in the community.

Methods: This study was a part of a study that analysed quantitative data that was integrated with findings from each participant's semi-structured interview. Participants were stroke survivors admitted to an urban university-affiliated tertiary medical centre with the clinical diagnosis of acute stroke or transient ischaemic attack (TIA) in Jan 2016-Jan 2017. The enrolled participants were resident aged at least 18 years old and able to ambulate independently. Participants with stroke secondary from other medical comorbidities and cognitive impairment were excluded. Potential participants were screened from emergency department's attendees and followed up regardless of their follow up status or sites

Results: A total of 89 participants consented to participate in this study. The mean age was 64 years old (SD 11), ranging from 36 to 88 years old, with the mean duration from the index stroke event was 2.37 years (SD 0.27). At discharge, 90% of stroke survivors fulfil the diagnosis of hypertension, 49% of diabetes mellitus and 96% of dyslipidaemia. Ninety-three percent were prescribed antihypertensive, 93%of diabetics prescribed antidiabetic agents and 96% with statins. Adherence to antidiabetics was highest at 91%, followed by antihypertensive at 76% and statin at 72%. At the time of the interview, only 31% of the hypertensive participants (including diabetic) achieved blood pressure under control, 32% of diabetics had HbA1c ≤6.5%, while 25% achieved the goal for LDL cholesterol level.

Conclusion: The risk factors were addressed adequately at discharge, but there are still missed opportunity in sustaining adherence to prescribed medication resulting in suboptimal long-term control of the risk factors.

EFFICIENCY OF HAND-ARM LANGUAGE THERAPY

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ABSTRACT

Introduction: Aphasia is one of the most prevalent and long-lasting stroke sequelae, generally accompanied by a constellation of language deficiencies that severely limit communication abilities and reduce functional independence. Despite the chronicity of aphasia, patients with targeted language treatment can continue to restore lost language abilities years after stroke onset. Identifying viable and effective strategies to mitigate the impacts of cognitive decline in older persons is a top goal for academics, clinicians at the current era. Evidence indicates that exercise and cognitive training improve cognitive health in older persons; however, the scientific community has yet to endorse a preferred methodology.

Objective: The present study aimed to investigate the efficacy of a multidisciplinary approach comprising 2 different methods: speech and language therapy using intensive naming therapy (INT) and involving movements during this naming therapy. It is suggested that there is a potential positive interaction between motor movements and aphasia recovery.

Methods: In a single case study involving a 75-year-old male with global aphasia following a left-hemispheric brain lesion were assigned to 2 group of treatments: (1) intensive naming therapy (INT), and (2) intensive naming therapy along with movements involving upper limbs. Patient were assigned to these 2 groups of treatment, in counterbalanced order for 1-2 hours daily over a period of 2 months. Patient was re-assessed using a clinical language test (MS APHASIA SCREENING TEST).

Results: Patient showed a significant decrease in word-retrieval difficulty and significant increase in verbal output (true and relevant words) after combination of INT+ movements involving upper limb compared to the treatment involving only INT.

Conclusions: In patients with chronic non-fluent aphasia, intensive training combining both approaches are critical for improving verbal communication and social interaction. A combinational hand-arm-language paradigm may be beneficial for aphasia recovery in stroke patients and require further study.

THE RASH THAT SOLVED THE DIAGNOSTIC DILEMMA: AN OVERLOOKED CAUSE OF ISCHEMIC STROKE

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ABSTRACT

Introduction: Although elderly ischaemic stroke is commonly due to hypertension or thromboembolic event, varicella vasculopathy is under recognised yet treatable cause.

Case: A 70-year-old woman who has diabetes, hypertension and hyperlipidaemia presented with slurring of speech and right-sided body weakness, after two days altered consciousness and headache. She also had painful left lumbar skin lesions for one week which she sought treatment but did not resolve. Upon admission, she had a fever, reduced power on four limbs and positive Babinski sign. The vesicular lesions was over T10-T12 dermatome area. Her cranial nerve examination was intact, while the NIHSS Score was 5 points. A plain brain computerised tomography showed acute right internal capsule infarct. Cerebral spinal fluid (CSF) showed lymphocytosis and normal protein as well as glucose ratio. The Gram stain culture were both normal. The CSF's PCR was positive for VZV. She was given two weeks of intravenous acyclovir, and she recovered fully. A repeat lumbar puncture at two weeks showed clearance of VZV.

Discussion: We reported a varicella-related stroke, an unusual yet treatable cause of stroke in the elderly. VZV vasculopathy due to productive virus infection of cerebral arteries is a recognised entity, but general doctors may not be as familiar. The skin lesions in our patient provided a clue to this and availability of onsite PCR test has allowed early confirmation of diagnosis and appropriate treatment.

Conclusion: Early recognition and confirmation of varicella vasculopathy in an elderly presenting with stroke is lifesaving as well as preventing unnecessary treatment and complication.

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EXTENDED HOURS THROMBOLYSIS GUIDED BY DWI-FLAIR MISMATCH

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ABSTRACT

Introduction: Intravenous thrombolysis (IVT) is the gold standard for the treatment of acute ischemic stroke (AIS) presenting within 4.5 hours of stroke onset. However, some patients present beyond this window due to multiple reasons. With the guidance of advanced imaging, patients that present between 4.5 to 9 hours from symptom onset are potential candidates who would benefit greatly from IVT with favorable functional outcome at 3 months. We would like to share our experience in treating two such patients with good outcome.

Methods: The first patient was a 71-year-old female with hypertension and dyslipidemia. She presented with right sided body weakness and vomiting at 5 hours post stroke onset. The National Institute of Health Stroke Scale (NIHSS) score was 10. Magnetic resonance imaging (MRI) revealed an acute left hemipontine infarct with diffusion weighted imaging (DWI)- Fluid-attenuated inversion recovery (FLAIR) mismatch. Magnetic resonance angiography (MRA) showed no large vessel occlusion (LVO). She was given IVT with tenecteplase 0.25mg/kg at 5.5 hrs. The second patient was a 62 year-old male with diabetes mellitus, hypertension, and ischemic heart disease. He presented with right sided body weakness at 5.5 hours after stroke onset with a NIHSS score of 14. MRI showed a left temporal acute infarct with DWI-FLAIR mismatch. MRA showed no LVO. IVT with tenecteplase 0.25mg/kg at 6 hours was administered.

Results: In the first patient, the NIHSS score improved from 10 to 5, and she remained stable until discharge. A computed tomography (CT) scan at 24 hours did not show any intracerebral hemorrhage (ICH), and she was started on antiplatelet therapy. At 3 months, her NIHSS score significantly reduced to 4, with modified Rankin scale (MRS) of 2. The second patient showed clinical improvement as early as day two post thrombolysis, and his NIHSS score was 0 at day 4. He was started on anticoagulant therapy at day six due to atrial fibrillation and remains neurologically well at 3 months follow up with MRS of 1.

Conclusion: Thrombolysis for AIS patients presenting at extended time-window based on DWI-FLAIR mismatch on MRI should be used for treatment decision due to the excellent clinical outcome, seen in our experience.

CAROTID ARTERY STENTING FOR RADIATION INDUCED LATE CAROTID STENOSIS: A CASE REPORT

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ABSTRACT

Introduction: Radiation-induced carotid stenoses are associated with fibrosis of the arterial layers and tissue planes that renders a "hostile neck" for surgical intervention. We report a patient who had radiation vasculopathy and was successfully treated with carotid angioplasty and stenting (CAS).

Methods: 42-year-old gentleman presented in 2017 with sudden onset of right hemisensory loss which recovered within 2 hours. In 2018, he had another brief episode of blurring of vision and numbness. He has history of deep x-ray therapy to the neck for nasopharyngeal carcinoma in 1998. Clinically, there were bilateral carotid bruits. He had no focal Neurological deficits. MRI of the brain was normal. Doppler ultrasonography showed diseased left common carotid (CCA) and left internal carotid artery (ICA) with multiple critical stenoses and ulceration. The right CCA was also diseased, but less severe. Balloon angioplasty of the left carotid and stenting of the left ICA was done with good results. Follow up doppler ultrasonography did not show any worsening of the stenosis and the patient was continued on double antiplatelets. However, in 2020 patient presented with fainting episodes after exercise. Angiography showed worsening of the left CCA stenosis and critical stenosis of the right CCA. He had interval stenting done whereby 2 stents were placed at the left CCA and 1 stent at the right CCA.

Results: Currently the patient is well on clopidogrel and rivaroxaban.

Conclusion: Carotid angioplasty and stenting seem both safe and effective in patients with radiation-induced vascular disease and the risk for cranial nerve injury after carotid endarterectomy can be avoided.

CEREBRAL VENOUS SINUS THROMBOSIS IN MALE GENDER: A CASE SERIES

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ABSTRACT

Introduction: Cerebral venous sinus thrombosis (CVST) is a rare type of stroke that commonly occurs in female patients. Common risk factors include hormone related (such as oral contraceptive pills, pregnancy, puerperium), sepsis, malignancy and other causes of hypercoagulable state. In male patients, the underlying diagnosis were less commonly identified and it can be associated with poorer prognosis than the female gender. Thrombophilia and recent head and neck trauma are important predisposing risk factors in men. The objective of this case series is to analyse the risk factors as well as the clinical and radiological features in CVST among men.

Methods: Data from medical records of male patients admitted with a diagnosis of cerebral venous sinus thrombosis at Hospital Universiti Sains Malaysia were retrospectively reviewed. Clinical features, risk factors, investigations, imaging findings and treatments were recorded.

Results: Four patients were included in this case series. All patients age were less than 60 years old, with the average age of 45 years. Risk factors found include infection in one patient and a regular anabolic steroid injection in another patient. The remaining two patients had no obvious cause. Symptoms include headache, seizure and hemisensory disturbance. All patients had extensive long segment venous sinus thrombosis. One patient was treated with warfarin, while the remaining patients received direct oral anticoagulant (DOAC). Two patients had residual thrombosis at 3-6 months follow up.

Conclusion: All patients in this case series had extensive CVST with uncommon risk factors. Further study is required to provide a better understanding of CVST in male patients, in terms of pathophysiology, risk factors, clinical and radiological findings as this may lead to more timely diagnosis and favourable outcomes.

EFFECTS OF MALAYSIAN MOVEMENT CONTROL ORDER (MCO) 1.0 FOLLOWING COVID-19 PANDEMIC ON ACUTE STROKE SERVICE IN SEBERANG JAYA HOSPITAL

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ABSTRACT

Introduction: The ongoing COVID-19 pandemic has revolutionized healthcare landscape globally. We aim to investigate the effects of Malaysian Movement Control Order (MCO) 1.0 following the pandemic on acute stroke service in Seberang Jaya Hospital (HSJ).

Methods: All Stroke Code activations presented to Department of Emergency & Trauma HSJ during MCO 1.0 (March 2020 – July 2020) are compared with a corresponding time period before COVID-19 pandemic (March 2019 – July 2019). Data were retrieved from online Stroke Code Registry.

Results: During the Malaysian MCO 1.0 in 2020, 53 stroke codes were activated, a significant increase from 2019 (n=16). Although <4.5 hours acute stroke activation remained as the majority in both 2020 (45/53, 84.9 %) and 2019 (15/19, 93.8 %), wake up stroke activation increased from 6.3% (2019) to 15.1% (2020). In 2020, the acute stroke service was expanded to cluster hospitals who contributed 22% of cases. During MCO 1.0 (2020), 39.6% were brought in by ambulance, compared to 31.3% in 2019. The therapeutic yield for thrombolysis in 2020 was 24.5% (n=13) and 31.3% (n=5) in 2019. Surprisingly, the mean duration from onset of stroke to the time of arrival to the hospital was longer in 2020, 1 hour 55 mins (SD 79 mins), compared to 2019 (mean 1 hour 25 mins, SD 44 mins). Despite the pandemic, patients were seen by emergency team within 2 minutes of arrival (2020: 1 min 28secs; 2019: 2mins). The mean duration from arrival until decision made was 61mins 45secs in 2020 and 53mins 22secs in 2019. The time taken from arrival to thrombolysis improved from 1 hour 56mins in 2019 to 1 hour 28mins in 2020.

Conclusion: The acute stroke service was not adversely affected, instead there were improvement in the key performance indicators during the MCO 1.0.

A RARE PONTINE INFARCT WITH ABDUCENS NERVE PALSY, HYPERACUSIS AND CONTRALATERAL HEMIANAESTHESIA MIMICKING GASPERINI SYNDROME.

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ABSTRACT

Introduction: Gasperini Syndrome (GS) is an uncommon, crossed brain stem syndrome that is characterized by ipsilateral impairment of V, VI, VII, VIII cranial nerves and contralateral sensory loss correlating with vascular territories supplied by anterior inferior cerebellar artery (AICA). Neuroimaging usually showed infarction over the caudal pontine tegmentum at the level of facial colliculi. To date, only a few cases of GS had been published. We report a case of medial tegmental pontine infarct with an uncommon presentation, mimicking Gasperini Syndrome.

Methods: Data regarding clinical features, risk factors, investigations, imaging findings and treatments were recorded

Results: A 57-year-old man with hypertension presented with sudden onset of right sided hemi-body numbness associated with double vision when looking horizontally towards the left side. It was associated with increase loudness and the intensity of the surrounding sound. Clinical examination revealed left abducens nerve palsy and hyperacusis. Other cranial nerves were intact. There was no hemiparesis and no cerebellar signs. He was treated with the antiplatelet and other usual ischemic stroke treatment. His symptoms improving after 24 hours with residual minimal abducens nerve palsy.

Conclusion: Brainstem syndrome with pontine infarct can manifest with various types of clinical features depending on the site of occluded vascular territory. In this case is due to occlusion of basilar artery perforators. Clinical localization of the site of lesion requires the knowledge of pontine neuroanatomy and should be supported by the neuroimaging study.

A CASE REPORT ON A RARE SYNDROME: GERSTMANN TETRAD IN A STROKE PATIENT

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ABSTRACT

Introduction: Gerstmann syndrome is a rare clinical disorder classically characterized by four tetrad of symptoms which includes agraphia, acalculia, finger agnosia and right-left disorientation. This cluster of impairments result from an insult to a specific region of the brain especially in the angular gyrus of parietal lobe in dominant hemisphere.

Case report: This study reports a case of 48 years old right-handed female patient presented with difficulty in talking, facial asymmetry and right sided weakness. Her neurological examination findings were consistent with all four features of Gerstmann syndrome with additional signs of aphasia with speech apraxia and alexia. MRI of brain revealed left middle cerebral artery (MCA) territory infarct and left thalamic infarct. These impairments potentially cause a significant negative impact on her quality of life.

Conclusion: Although Gerstmann syndrome is a rare clinical case, it essentially has important clinical value with respect to predicting localisation of brain lesion, prognostication and establishing ideal treatment strategies for rehabilitation.

Keyword: Gerstmann syndrome, agraphia, acalculia, finger agnosia, right-left disorientation, stroke

OXFORD COGNITIVE SCREEN MALAY VERSION: VALIDATION OF STROKE-SPECIFIC COGNITIVE SCREENING TEST PILOT STUDY

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ABSTRACT

Introduction: Although widely used, the MMSE and MoCA are often lamented for being inconsiderate of certain groups of stroke patients, e.g. those with lower education, aphasia, and neglect. The Oxford Cognitive Screening (OCS) is a screening tool designed to identify cognitive impairments post-stroke. Recent studies found that 51% and 87% stroke patients who passed MoCA and MMSE respectively showed impairments in OCS. These findings highlight the under-detection of post-stroke cognitive impairments using tests originally developed for dementia of Alzheimer's type. The primary aim of this study is to adapt and validate the OCS Malay and to explore the effect of education and depression.

Method: The OCS Malay undergone forward and backward translation process. The final version was administered to 5 healthy individuals to examine feasibility. Nineteen stroke patients and 38 healthy controls completed OCS-Malay at 3 sites- neurology, physiotherapy, and family medicine clinics at HUKM. All participants completed the MMSE, MoCA, OCS, and BDI-II.

Results: Standardized internal consistency of OCS-Malay was acceptable (Cronbach's alpha = 0.74), suggesting good reliability. OCS-Malay generally showed significant correlations with corresponding subtests of MoCA (r = 0.26 to 0.78) but not MMSE, indicating fair concurrent validity. Education effect was observed in calculation task among controls and in executive task among patients. Attention and memory subtests only differentiated patients and controls with tertiary education. In addition, verbal fluency accounts for 11% of variance between patients and control in MoCA (p = 0.02). Higher depressive symptoms are significantly correlated with better performance on certain cognitive tasks in OCS-Malay, e.g. executive function (r = -0.31) and visual attention (r = -0.34). This relationship was not found for MoCA and MMSE.

Conclusion: Preliminary findings on reliability and validity support that the OCS-Malay is comparable to other translations of OCS. Similar mean scores were reported except calculation, episodic memory, and executive subtests.

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CHALLENGES OF POST-ACUTE STROKE REHABILITATION IN OBESE PATIENTS: A CASE SERIES

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ABSTRACT

Introduction: The prevalence of obesity worldwide is increasing, as are the associated co-morbidities including stroke. In post-acute stroke rehabilitation, obesity gives an impact in the rehabilitation efficiency, length of stay and cost of treatment.

Methods: Here we discuss two cases of patient with obesity undergoing post-acute stroke inpatient rehabilitation in our centre and the challenges encountered. Improvement in functional outcome was measured by the Modified Barthel Index (MBI).

Case 1:
35 years old male with BMI of 46kg/m^2 diagnosed with acute left basal ganglia bleed secondary to hypertensive emergency. Despite good motor recovery, the progress of his rehabilitation program was delayed with difficulty in obtaining the proper sized equipment to facilitate in his mobility. Furthermore, management of his co-morbidities which are severe obstructive sleep apnoea and chronic right foot cellulitis had to be optimised before proceeding with his stroke rehabilitation.

Case 2:
43 years old morbidly obese (BMI 44kg/m^2) male was diagnosed with acute left thalamic bleed which was conservatively treated. The admission was complicated with acute attack of gouty arthritis and acute kidney injury which impeded his rehabilitation. The slow rehabilitation progress was further hampered by the lack of suitable equipment for his mobility training.

Results: We highlight how obesity can affect rehabilitation by the length of stay and expenditures incurred. However, improvement in functional outcome for both cases can be seen with MBI score from 45% to 55% and 42% to 82% for Case 1 and Case 2 respectively. Methods taken to overcome the obstacles presented are also discussed.

Conclusion: Despite several challenges in rehabilitation of obese patients, targeted interdisciplinary interventions can still be done with team effort to optimize post-acute stroke rehabilitation care delivery which will improve the functional outcome.

OVERVIEW OF ISCHEMIC STROKE AMONG END STAGE RENAL FAILURE PATIENTS ON HEMODIALYSIS

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ABSTRACT

Introduction: Ischemic stroke among end stage renal failure (ESRF) patients on hemodialysis (HD) are not previously study in Malaysia. This study investigated the clinical spectrum and outcome of ischemic stroke in ESRF patients on HD.

Methodology: Case control study from May 2019 till May 2021 at Department of General Medicine Hospital Bukit Mertajam, Penang. Inclusion criteria include ESRF patient on HD aged more than 18 with stroke symptoms, wake up stroke and plan CT brain either shown ischemic cerebral infarction or normal finding. Stroke mimic symptoms and non contrasted CT brain shown hemorrhage or mass, chronic kidney disease or ESRF not on HD were excluded.

Results: A total of 57 patients were recruited with mean age of 73 year old SD (13), male 40 patients (70%), female 17 patients (30%). Only 18 patients, 32% presented early following stroke symptoms with 88% of lacunar stroke. Baseline NIHSS 4, SD (1). Mean hemodialysis vintage was 6 years, SD (3). Pre HD mean systolic blood pressure was 184 mmhg, SD (14), Pre HD mean diastolic blood pressure was 107 mmhg, SD (6). Pre HD blood parameters revealed potassium 3.9, SD (0.8), Urea 20.6, SD (4.8), corrected calcium 1.9, SD (0.2), phosphate 2.3, SD (0.3) and hemoglobin 8.6, SD (0.8). Mean BMI 27, SD (2.1). Mean Modified Rankin Score was 3 upon discharge. Case fatality in 1 year was 16%. The risk factors for fatality were recurrent stroke (HR 49; 95% CI 7-340), smoking (HR 25; 95% CI 6-97), atrial fibrillation (HR 25; 95% CI 6-97), diabetes mellitus (HR 17; 95% CI 6-51), ischemic heart disease (HR 13; 95% CI 5-33) and hypertension (HR 11; 95% CI 5-24).

Conclusion: Preventive measures in the risk factors contributed to the case fatality among ischemic stroke patients with ESRF on HD should be emphasized for better outcome.

DRIVING ADVICE DOCUMENTATION ON DISCHARGE LETTERS FOR CARDIAC AND OTHER PATIENTS.

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ABSTRACT

Introduction: Patients with relevant cardiac conditions should be given driving advice prior to hospital discharge. This is in accordance to the National Driving and Vehicle Licensing Agency (DVLA) guidelines in UK. The purpose of this quality improvement project is to increase the awareness among doctors on the importance for driving advice for patients as a holistic approach in patient care and to contribute to public safety.

Method: Posters to promote driving advice documentation were put in place at doctors office in cardiology and acute medicine ward in Queen Hospital, Burton. Collection of data was done prospectively over a month. Discharge letters was screened for presenting complain, diagnosis, driving status and driving advice. The conditions included in this audit was acute coronary syndrome, pacemaker insertion, heart failure, stroke, epilepsy, seizure and syncope for investigation. Data was then compared to the initial first cycle of audit. Statistical analysis was calculated using Fisher's exact test.

Conclusion: This is the first cycle of the QIP. In the initial audit, only 8 % of cardiology patients was found to have driving advice documented. Following the intervention with posters, the first cycle of data suggested a positive impact of the intervention with an increase of documentation of driving advice by 24 % (from 8 % to 32 %). Significance of intervention was calculated and given a value of 0.028. It was also noted that 10 % of the patients was neurology and had 100 % driving advice documentation. The QIP is now expanding to focus on for patients with stroke.

PREPAREDNESS IN STROKE CAREGIVING AMONG FAMILY CAREGIVERS

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ABSTRACT

Background and Purpose: Stroke or brain attack is the sudden loss of neurological function caused by interruption of the blood flow to the brain. The term cerebrovascular accident (CVA) is used to interchangeably with stroke to refer to the vascular condition of the brain. This scenario also has put the immediate family members to become the family caregivers without knowing whether they are well prepared or not. Moreover, it is important to ensure that family caregivers are ready to take care of stroke patients in order to increase their contribution to the rehabilitation of stroke patients. Therefore, this study is intended to highlight the preparedness in stroke caregiving among family caregivers. Objective: To determine the preparedness in stroke caregiving among family caregivers. Methods: A cross-sectional study was carried out with a convenience sample among 85 family caregivers of stroke patients using self-administered questionnaires, demographic data and preparedness for caregiving scale (PCS) at Rehabilitation Medicine Department of Hospital Sungai Buloh, Selangor. Statistical Package for the Social Sciences (SPSS) software version 21.0 was used to analyze the data collected. Results: (response rate). There are significant associations between age and gender and preparedness for caregiving scale (PCS) score and no significant association between income and PCS score. The younger and female caregivers are more prepared than older and male family caregivers in stroke caregiving. PCS score are greater in higher income caregivers. Conclusions: Findings of study are beneficial to demonstrate the statistical data for preparedness among family caregivers in stroke caregiving at Rehabilitation Medicine Department of Hospital Sungai Buloh which can develop future educational and motivational support particularly for family caregivers.

ACUTE STROKE UNIT OF SEBERANG JAYA HOSPITAL – ONE YEAR EXPERIENCE

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ABSTRACT

Introduction: Acute stroke unit (ASU) has been proven to improve clinical outcome of stroke patients compared to general medical wards via its comprehensive and coordinated care delivered by multi-disciplinary team. Ever since Seberang Jaya Hospital started ASU service in 11 November 2019 to become a Primary Stroke Centre for northern region of Malaysia, we would like to evaluate our service and share our experience.

Methods: This is a retrospective cross-sectional study. Data were extracted from ASU Admission Bundle of all patients whom were admitted to the ASU of Seberang Jaya Hospital, from 1 January 2020 until 31 December 2020.

Results: A total of 462 patients were admitted to ASU during the study period. Two-thirds (66%) of them were males and 34% were females. Majority were Malays (49%), followed by Chinese (31%), foreigners (17.0%) and Indians (16.0%). The mean age was 59 years old (SD 14.3 years) and the mean NIHSS was 3 (SD 2.9). Almost all the patients (90%) received stroke education from the ASU nurse, 84% had swallowing test performed by occupational therapists and 92% were seen by physiotherapist before discharged. Average length of stay was 1.60 days.

Conclusion: As one of the 4 centres in Malaysia having ASU service, we aspire to inspire more centres to establish this service to benefit our stroke patients and improve patient care.

UKM MEDICAL CENTER STROKE UNIT: TEAM RECRUITMENT OF PATIENTS TO THE AVERT DOSE TRIAL DURING THE COVID-19 PANDEMIC

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ABSTRACT

Introduction: Mobility training is a complex intervention and recovery post-stroke is multidimensional. Adaptive trial design is flexible and efficient. AVERT DOSE is the first trial to use this design in stroke rehabilitation.

Materials and Method: AVERT DOSE is a four-arm, two-stage, covariate-adjusted, response-adaptive, randomised trial. We will recruit >2,500 patients from Australia, New Zealand, Malaysia, Singapore, India, UK and Brazil. Randomisation to two groups according to stroke severity (Mild: NIHSS 0-7; Moderate: NIHSS 8-16). Covariates are age, geographic region and reperfusion interventions. Interventions: Patients are randomised to one of four mobility training regimens in each strata (including a pre-specified reference group), and the intervention is delivered for up to 14 days. UKM Medical Centre is recruiting to this trial. Primary Outcome: Identification of the intervention regimen that results in higher proportion of favourable outcome (mRS 0-2) at 3 months post-stroke. Blinded assessments will occur at 3 and 6 months. An adaptive sample size re-estimation provides 80% power to detect a 10% absolute treatment effect or larger compared to the pre-specified reference group, with a significance threshold of p=0.025 per stratum. Analyses: Intention-to-treat. Trial registration: ACTRN:12619000557134.

Results: Trial Status. Recruited: 101 participants, 24 from UKM. Online training packages and zoom meetings for all international sites (n=24) provided remote support, responses to COVID-19. Emergency department screen all admissions for COVID with two hours response time. Effective recruitment strategies use multiple staff to screen and recruit.

Conclusion: Undertaking rehabilitation research requires a flexible and dynamic problem-solving approach, especially during a pandemic.

SUCCESSFUL THROMBOLYSIS BEYOND GUIDELINES: A CASE SERIES

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ABSTRACT

Introduction: The therapeutic benefit of thrombolysis is not extended to more than 4.5 hours in many patients due to the protocol's time window restriction. However, everyone's penumbra differs, and delayed thrombolysis therapy may still be beneficial.

Case Presentation: We reported two acute stroke cases with moderate National Institutes of Health Stroke Scale (NIHSS) and onset beyond 4.5 hours that were successfully thrombolyzed with intravenous recombinant tissue plasminogen activator (tPA) - low-dose Tenecteplase (TNK). Case 1 Forty-year-old young gentleman with NIHSS 6/42 and disabling aphasia. The MRI showed hyper intense signal on diffusion weighted imaging (DWI) at right corona radiata with corresponding FLAIR signal mismatch. The T1-weighted black blood vessel wall imaging shows atherosclerotic plaque enhancement in keeping with underlying intracranial atherosclerotic disease. Case 2 Sixty-three-year-old gentleman with NIHSS 14/42 and cortical signs. The MRI showed hyper intense signal on DWI at left middle cerebral artery (MCA) region with corresponding FLAIR signal mismatch. The MRA revealed reduced opacification at M3 segment of left MCA indicating distal vessel occlusion.

Discussion: Both patients were thombolysed based on DWI/FLAIR mismatch – tissue basis rather than time window and resulted in good neurological recovery and significant improvement of MRS to zero at 90 days regardless of the stroke aetiology. DWI-FLAIR mismatch was defined as presence of parenchymal signal lesion on DWI but absence of corresponding hyperintense lesion on the FLAIR. It has a relatively high specificity (71–93%) and moderate sensitivity (48–62%) for identifying stroke lesions within 4.5 hours of onset (1-5). Interestingly, both patients received intravenous TNK 0.25mg/kg which resulted in a robust clinical recovery. Although TNK used as an off-label treatment for AIS, it has a higher fibrin specificity and a longer half-life, and many studies showed TNK - trends towards more early neurologic improvement at 24 hours and larger proportion of good neurologic outcome at 90 days (6-8)

Conclusion: In conclusion, thrombolysis in AIS with late time window using penumbra-based imaging is safe and effective in neurological recovery. Extensive research on penumbra-based thrombolysis should be conducted, including the benefit of using Tenecteplase as a thrombolytic agent in AIS patients.

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KEY MIRNAS AND TARGET GENES FOR ISCHEMIC STROKE

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ABSTRACT

Introduction: Ischemic stroke is caused by blockage in an artery that restricts normal flow of blood and oxygen within the brain. Most of the identified biomarkers for ischemic stroke are still at the pre-clinical stage, and yet to be cross validated. The objective of the current study is to elucidate differential expression microRNAs (DEmiRNAs) for ischemic stroke.

Methods: Raw miRNA datasets were obtained from NCBI GEO database. Bioinformatic analysis of the microarray datasets and RNA-seq dataset were carried out using limma and DESeq2 packages, respectively. The target genes for DEmiRNAs were predicted using TargetScan and miRDB. Cytoscape software was used to construct and visualize the miRNA-mRNA regulatory network. The functional enrichment analysis of the predicted target genes was performed using DAVID software.

Results: The present study has discovered 685 regulatory genes through the target prediction of which, three DEmiRNAs, namely, hsa-miR-320d, hsa-miR-139-5p, and hsa-miR-485-3p were overlapped by the highest number of genes. The regulatory genes were significantly enriched in regulation of transcription, nervous system development, and protein phosphorylation.

Conclusion: This study suggested that hsa-miR-320d, hsa-miR-139-5p, and hsa-miR-485-3p may be the potential diagnostic biomarkers for ischemic stroke.

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FACTORS INFLUENCING THE UPTAKE OF STROKE THROMBOLYSIS IN MALAYSIA: A CASE STUDY FROM THE HEALTHCARE PROVIDERS' PERSPECTIVE

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ABSTRACT

Introduction: Translation of evidence into clinical practice for use of stroke thrombolysis has been slow, especially across low- and middle-income countries. This study aims to explore factors influencing the uptake of intravenous thrombolysis among ischemic stroke patients in Malaysia, from the perspective of healthcare providers.

Methods: Data for this single case study from a large tertiary hospital was sourced from a larger multiple case design study. A mixed method approach was used for data collection: 1) semi-structured in-depth interviews and focus group discussions, 2) surveys, and 3) review of medical records. Interview guides were mapped according to the Tailored Implementation of Chronic Diseases (TICD) framework. Forty-six participants comprising of healthcare providers involved in providing the service were included. Thematic analyses were conducted inductively before triangulated with quantitative analyses.

Results: Six contributing factors found include: 1) patient-related which were delayed presentation and patient comorbidities, 2) work process factors comprised of challenges in identifying stroke cases during triage and different thresholds in decision making, 3) team dynamics factors were communication and differences among team members' perspective, 4) constraints of resources including facilities and human resources, 5) leadership which included availability of stroke champions and institutional support, and 6) initiatives for continuous improvement to deliver the service. Quantitatively, pre-hospital delay was the main reason for missed opportunities of intravenous thrombolysis (58.5%). Less than 5% potentially had in-hospital delays. Survey among triage staff reported that 70% had little difficulties in identifying stroke cases.

Conclusion: Factors related to patients and constraints of resources were commonly reported. Nevertheless, optimal triage, team dynamics and availability of local champions were other pertinent factors contributing to the uptake of stroke thrombolysis. Understanding factors which affect the implementation of this evidence-based therapy allows targeted actions to enhance its adoption to be carried out.

GROWTH HORMONE AND ISCHEMIC STROKE: FOCUS ON GROWTH HORMONE DEFICIENCY AND THERAPEUTIC EFFECTS OF GROWTH HORMONE ON BRAIN RECOVERY

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ABSTRACT

Introduction: Stroke, with ischemic stroke being more common than haemorrhagic stroke, is a leading cause of acquired disability worldwide with a long recovery journey. In the context of ischemic stroke, studies have reported increased prevalence of growth hormone (GH) deficiency in this population. Further, GH is shown to enhance neurorestoration. With it being readily available in the market, its therapeutic potential in ischemic stroke recovery has been considered in both pre-clinical and human studies. Hence, this review aims to critically appraise whether GH is a potential therapeutic target for stroke recovery.

Methods: Relevant articles were identified through a systematic review conducted via PubMed, OvidMedline, Ovid Embase, Web of Science and Scopus plus hand-searching of reference lists of retrieved publications. Title, abstract and full text screening along with data extraction of included articles were done based on pre-determined inclusion and exclusion criteria.

Results: The search yielded a total of 1348 articles in which 15 were included. 8 studies reported post-stroke GH deficiency, 4 reported pre-clinical evidence of GH therapeutic effects on stroke recovery and 3 reported clinical studies of recombinant human GH (rhGH) treatment post-ischemic stroke. Studies reported that post-stroke GH deficiency is common during the subacute phase and is persistent to the chronic phase of ischemic stroke with 44.5% of participants from 5 studies experiencing it. For preclinical studies, it is reported that GH is a potential treatment for stroke recovery. Clinical studies also show that GH is safe and beneficial for improving cognition, motor, cellular and molecular outcomes post-stroke.

Conclusion: This systematic review suggests that GH deficiency is common after ischemic stroke and that GH treatment is a promising therapy for post-ischemic stroke recovery. However, future research should comprise a larger number of study participants of both genders and of a longer follow-up duration.

PREDICTORS OF POST-THROMBOLYSIS INTRACEREBRAL HAEMORRHAGE IN PATIENTS WITH ACUTE ISCHEMIC STROKE

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ABSTRACT

Introduction: Intracerebral haemorrhage (ICH) following intravenous thrombolytic therapy (IVT) for acute ischemic stroke is associated with a high rate of morbidity and mortality. It is crucial to understand the associated risk factors of ICH post-IVT in order to reduce the ICH risk.

Objective: To study the risk factors associated with ICH in acute ischemic stroke patients treated with IVT.

Methods: This is a retrospective cross-sectional study of all ischemic stroke patients who had received IVT from year 2012 to January 2021. Data was collected via review of medical notes and National Neurology Registry.

Results: A total of 97 stroke patients received IVT from 2012 to January 2021. Twenty-one patients (21.6%) experienced ICH post-IVT. The mean age of patients developed ICH was 66 (SD=8.9). Fourteen were male (66.7%) and 7 were female (33.3%). Older age group (P=0.014), hypertension (P=0.034), atrial fibrillation (P=0.022), and NIHSS score (P=0.031) were significantly associated with the prevalence of ICH in post-IVT stroke patients. Prevalence of ICH was significantly higher among those with severe stroke with NIHSS score ≥16 (52.4%), compared with those with moderate (38.1%) and mild stroke (9.5%). Other variables such as gender, diabetes mellitus, smoking, dyslipidaemia, previous stroke, stroke subtypes, onset-to-treatment time, and door-to-needle time were not found to have significant association with prevalence of ICH.

Conclusion: Older age group, hypertension, atrial fibrillation and NIHSS score on admission ≥16 are risk factors for ICH in patients with acute ischemic stroke treated with IVT in our hospital. These findings are useful to help in prognosticate risk of ICH post IVT.

PREDICTORS OF MORTALITY IN THROMBOLYSED ACUTE ISCHEMIC STROKE PATIENTS OF SEBERANG JAYA HOSPITAL

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ABSTRACT

Introduction: Third leading cause of death in Malaysia, stroke is a debilitating disease which incidence is continue to rise. To improve stroke care and prognosis of patient, it is important to identify potential predictors of mortality in stroke patient who have undergone reperfusion therapy.

Objective: To determine the predictors of 90 days mortality in acute ischemic stroke patients who underwent intravenous thrombolysis (IVT) in Seberang Jaya Hospital.

Methods: This is a retrospective cross-sectional study involves stroke patients who were thrombolysed in Seberang Jaya Hospital from year 2013 to January 2021. Data was extracted from the medical records and National Stroke Registry.

Results: Out of 97 acute ischemic stroke patient who were given IVT, 19 patients (19.59%) have died within 90 days. The mean age of the fatalities was 64.6 (SD = 12.6). Ten were male (52.6%) and 9 were female (47.4%). Mortality rate was significantly higher in NIHSS score of severe stroke (63.2%) compared to moderate (31.6%) and mild stroke (5.3%) (P = 0.001). Stroke sub types was significantly associated with mortality whereby total anterior circulation infarct (TACI) had highest mortality rate (52.6%) followed by partial anterior circulation infarct (PACI) (36.8%), lacunar infarct (LACI) and posterior circulation infarct (POCI) (5.3% each) (P = 0.002). The other variables such as age, gender, presence of hypertension, diabetes mellitus, atrial fibrillation, dyslipidaemia, smoking, onset to treatment time, door to needle time were not found to have any significant association with mortality.

Discussion and Conclusion: NIHSS scores and stroke subtype were the 2 potential predictors of mortality in acute ischemic stroke patients in our centre.

BILATERAL DEJERINE SYNDROME: A CASE REPORT WITH DIAGNOSTIC DILEMMA

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ABSTRACT

Introduction: Bilateral Dejerine syndrome (medial medullary infarct) is a very rare type of stroke with catastrophic consequences, therefore early diagnosis is crucial. Herein, we report a rare case of bilateral Dejerine syndrome presented with quadriparesis and multidirectional nystagmus.

Case Presentation: A 52-year-old woman presented with blurring of vision, dizziness and vomiting for one day, associated with quadriparesis. She had a history of hypertension and diabetes mellitus with poor glycemic control. On examination, she was fully conscious with dysarthria. Her bilateral upper limbs and lower limbs power were 4/5 with intact sensation. Her ophthalmology examination revealed multidirectional nystagmus. However, there was no dysmetria and dysdiadochokinesia. Subsequently, magnetic resonance imaging of brain showed characteristic “heart appearance” shape on diffusion weighted imaging (DWI) consistent with bilateral medial medullary stroke and presence of severe stenosis of right vertebral artery.

Discussion: Bilateral Dejerine syndrome is very rare, and clinical diagnosis without neuroimaging can be difficult. The most common clinical features are weakness, dysarthria, hypoglossal palsy, flaccid, or spastic quadriplegia. Multidirectional nystagmus is not a usual finding in a pure Dejerine syndrome. In acute bilateral medial medullary infarct, MRI shows a characteristic “heart-shaped appearance” in the ventral medulla. Overall outcome of bilateral medial medullary infarct without intervention in acute phase is poor with severe morbidity and mortality. Therefore, early diagnosis based on combination of clinical and radiological findings is critical.

Conclusion: Despite the rarity, bilateral Dejerine syndrome should be considered as a differential diagnosis in patient with acute onset of multidirectional nystagmus and quadriparesis.

OUTCOME OF ISCHEMIC STROKE THROMBOLYSIS TREATMENT IN SEBERANG JAYA HOSPITAL, A SINGLE CENTER 9 YEARS REVIEW: 2012- 2020

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ABSTRACT

Introduction: Stroke is the second leading cause of mortality and morbidity worldwide. Intravenous thrombolysis (IVT) with recombinant tissue plasminogen activator (rtPA) is the standard of care for patients with acute ischemic stroke.

Objective: To study the treatment outcome of ischemic stroke patients who had received IVT at Seberang Jaya Hospital.

Methods: This is an analysis of an ongoing stroke registry data that included acute ischemic stroke patients who had received IVT at Seberang Jaya Hospital from year 2012 to 2020.

Results: A total of 92 patients with ischemic stroke had received IVT from year 2012 to 2020. The mean (SD) NIHSS upon admission was 12.5(4.98). 43.48% were partial anterior circulation infarct (PACI), 27.17% were lacunar cerebral infarct (LACI), 22.83% were total anterior circulation infarct (TACI), and 6.52% were posterior circulation infarct (POCI). Modified Rankin Scale (MRS) score at three months were: MRS 0 (8 [8.70%]); MRS 1 (15 [16.30%]); MRS 2 (16 [17.39%]); MRS 3 (12 [13.04%]); MRS 4 (14 [15.22%]); MRS 5 (7 [7.61%]); and MRS 6 (17 [18.48%]), missing in follow up (3 [3.26%]). Twelve (13.04%) patients died in the same admission, and five (5.43%) patients died within 3 months. Twenty patients (21.73%) developed intracranial bleeding (ICB) post IVT: 10 were symptomatic and 10 were asymptomatic. Eight patients (8.70%) required decompressive craniectomy, in which three patients had MRS 3 and five patients died at 3 months.

Conclusion: Among acute ischemic stroke patients who had received IVT at our center, a smaller proportion of patients achieved favourable outcome (MRS score of 0 or 1) at three months compared to the ECASS III trial (25% vs 52.4%). However, our ICB complication rate was lower (21.73% vs 27%). Further studies are needed to look into the prognostic factors of stroke thrombolysis outcome at our center.

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A CLUSTER-RANDOMISED CONTROLLED TRIAL EVALUATING THE EFFECTIVENESS OF STROKE RISKOMETER IN IMPROVING STROKE RISK PROBABILITY IN ADULTS: A PRELIMINARY ANALYSIS

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ABSTRACT

Background: Stroke is considered as global public health problem and mainly caused greatest burden to the low- and middle-income countries. The Stroke Riskometer application (app) represents a new stroke prevention strategy that is distinctly different from the conventional high-cardiovascular disease (CVD) risk approach.

Objectives: This proposed study aims to evaluate the effectiveness of the Stroke Riskometer app in improving stroke risk awareness and stroke risk probability amongst the adult population.

Methods: The study was designed as a parallel-group non-blinded cluster-randomised controlled trial (RCT). It was conducted in Kelantan, Malaysia with 6-weeks follow-up. Total 116 participants were randomized to either interventional group (n = 58) who equipped with free Stroke Riskometer app and informational leaflets or control group (n = 58) that receive standard management.

Results: The mean age of participants was 31.97 (SD 9.89). There were no significant differences in baseline characteristics except household income (p-value = 0.023) and body mass index (BMI) (p-value = 0.038). The stroke risk awareness was successfully improved within the study duration (β= 2.76; 95% CI, 1.46 – 4.07; R^2=0.062) with the interventional group achieved as early in third weeks. The stroke risk probability of the interventional group was significantly lower than that of control group (β= -0.24; 95% CI, -0.44 – -0.61; R^2=0.020) especially in 10 years' time.

Conclusion: The results suggest that Stroke Riskometer app produces more effective impact on both stroke risk awareness as well as the stroke risk probability changes. The implementation on larger scale as a primary preventive modality in Malaysia potentially give a positive effect on stroke and other non-communicable disease preventive strategies.

PH-WEIGHTED AMIDE PROTON TRANSFER MAGNETIC RESONANCE IMAGING (APT MRI) BETTER DELINEATES THE ACIDOTIC ISCHEMIC PENUMBRA

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ABSTRACT

Introduction: The aim of recanalization therapy in acute ischemic stroke is to salvage tissue at-risk of infarction known as the penumbra. Conventional magnetic resonance imaging (MRI) technique for identifying the penumbra relies on spatial mismatch between diffusion and perfusion MRI. However, the mismatch often fails to estimate the extent of the at-risk tissue, falsely including benign oligemia. Amide proton transfer (APT) is a pH-weighted chemical exchange saturation transfer MRI technique that may better identify the penumbra as tissue acidosis occurs prior to cerebral infarction. This study investigated the use of APT MRI for identifying the ischemic penumbra in acute ischemic stroke.

Methods: Six rats underwent middle cerebral artery occlusion and were imaged using a 9.4 T MRI scanner to acquire diffusion, perfusion, and APT MR images. The apparent diffusion coefficient (ADC), cerebral blood flow (CBF), and APT effect were quantified from the MR images respectively. The deficit areas of the parametric maps were automatically segmented through K-means clustering and the mismatch between the ADC/APT/CBF deficit areas were analyzed.

Results: In all the six animals, the APT deficit areas coincided well with the ADC deficit areas, highlighting the potential of the previous to identify the ischemic area. Upon analyzing the three deficit areas, it was observed that the APT deficit areas were larger than the ADC deficit areas, but smaller than the CBF deficit areas. This demonstrated that the APT deficit area could further separate the diffusion-perfusion mismatch into zones of acidotic ischemic penumbra and benign oligemia.

Conclusion: APT MRI is a non-invasive pH-weighted imaging technique that shows promise in complementing conventional MRI techniques to better delineate the acidotic ischemic penumbra and improve acute stroke diagnosis.

IMAGING OF ACUTE STROKE PATIENT WITH COVID-19: A SERIAL CASE

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ABSTRACT

Background: Coronavirus Disease 2019 (COVID-19) is an infectious disease caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). SARS-CoV-2 is a new type of coronavirus that has never been previously identified in humans. On March 11, 2020, WHO has declared COVID-19 as a pandemic.[1] In addition to respiratory symptoms, COVID-19 is also associated with neurological manifestations, including delirium or encephalopathy, agitation, stroke, meningoencephalitis, impaired sense of smell and taste, anxiety, depression, and sleep disturbances. In many cases, these neurologic manifestations have been reported even though there are no respiratory symptoms. The type of stroke that can occur in cases of COVID-19 is generally an ischemic stroke. However, the type of hemorrhagic stroke has also been reported to occur with a smaller incidence.[3,4] The mechanism that causes stroke in COVID-19 patients is not known for certain. However, there have been several theories that could cause a stroke in COVID-19 patients. This article reports 3 cases of stroke with COVID-19 and their imaging results.

Method: Patient data was collected from the medical records of patients diagnosed with stroke with confirmed COVID-19 who were treated in the isolation room of the Saiful Anwar Hospital Malang. The patient's imaging examination data were taken from the Radiology Information System of Saiful Anwar Hospital Malang.

Keywords: Acute stroke, Covid-19.

CONFLICT OF INTEREST
The authors declare that they have no conflict of interest.

Case 1

A 50 years old male, comes with complaints of left hemiparesis suddenly when he woke up, accompanied by a drooping, dysarthria, and headache. The patient did not complain of fever, cough, runny nose, painful swallowing, or shortness of breath. History of contact with COVID-19 patients was denied. The patient had a history of hypertension in the last 10 years with a history of routinely taking ramipril, aspirin, and atorvastatin. The patient also has a history of diabetes mellitus for 10 years, controlled with insulin, and a history of heart ring surgery 4 month ago.

At the ER of Saiful Anwar Hospital, screening for COVID-19 was carried out with a rapid antibody test with reactive results. Then RT-PCR examination was carried out with positive results for COVID-19. CRP was

increased, D-Dimer, Procalcitonin, and ferritin were normal. Chest X-Ray results was within normal limits. No signs of pneumonia were found. A head CT scan without contrast showed sulcal effacement in the right insular lobe and right parietal lobe, dilated sulci and sylvian fissure, prominent gyri, well differentiated white and gray matter, dilated ventricular and cistern systems, no midline shift, infratentorial (pons, mesencephalon, CPA, and cerebellum) was normal, orbits and mastoid air cells were normal, and there was an isodense lesion of the left ethmoidal sinus. From the results of a CT scan of the head without contrast, it was concluded of ischemic images in the right insular lobe and right parietal lobe, senile brain atrophy, and left ethmoidal sinusitis. The patient was treated together by clinicians from the departments of neurology, pulmonology, cardiology, and internal medicine. The patient died on the 4th day of treatment.

Table 1. Laboratory Result of Patient 1

Laboratory Test	27/07/2020	31/07/2020	Normal Value
Rapid Test Antibody SARS-COV2	**Reactive**		
Nasopharyngeal swab (RT-PCR)	**Positive**		
Hb (g/dL)	13.3	13.7	13.4-17.7
Erythrocytes (10^6/uL)	4.9	5.03	4-5.5
Leucocytes (10^3/uL)	8.4	12	4.3-10.3
Hematocrit (%)	39.3	41	40-47
Platelets (10^3/uL)	250	242	142-424
Blood glucose (mg/dL)	174		
Blood gas analysis			
pH	7.4	7.33	7.35-7.45
pCO2 (mmHg)	29.5	30.3	35-45
pO2 (mmHg)	113.5	100.3	80-100
HCO3 (mmol/L)	18.2	16.2	21-28
O2 saturation (%)	98	97.4	>95
CRP (mg/dL)	**0.39**	**4.16**	<0.3
Procalcitonin (ng/mL)	<0.02	<0.02	<0.5
Total cholesterol (mg/dL)	171		60-100
Triglycerides (mg/dL)	**162**		<150
HDL (mg/dL)	45		>50
LDL (mg/dL)	75		<100
Fibrinogen (mg/dL)	301.3	396.7	154.3-397.9
D-Dimer (mg/L FEU)	0.26	0.37	<0.5

Case 2

A 60 years old female, came with complaints right hemiparesis suddenly when the patient was in the bathroom. Complaints were also accompanied by headache, vomiting more than 5 times, and decreased consciousness. When the patient is in the ER the patient tends to be sleepy. There were no complaints of dysarthria or seizures. There were no complaints of fever, painful swallowing, or shortness of breath. There were complaints of cough and cold. History of contact with COVID-19 patients was denied. The patient had a history of uncontrolled hypertension since about 4 years ago. There was no history of diabetes mellitus, heart disease, or previous stroke.

At the ER of Saiful Anwar Hospital, screening for COVID-19 was carried out with a rapid antibody test with reactive results. The results of the RT-PCR examination showed positive for COVID-19. CRP, D-dimer, and ferritin were increased, Procalcitonin was normal. Chest X-Ray results showed cardiomegaly, aortic elongation, and pulmonary congestive. The results of a CT scan of the head without contrast showed a hyperdense lesion with perifocal edema on the left thalamus with a size of 2.6cm x 1.8cm x 3.7cm. Hyperdense lesions appear to fill the right and left lateral ventricles, the third and fourth ventricles. Sulci, sylvian fissure and gyrii were normal. Good white and gray matter differentiation. Right and left lateral ventricles were dilated with rounded anterior horns and open temporal horns with VSI ±35% with interstitial edema. There was a midline shift to the right by 3 mm. Infratentorial (pons, mesencephalon, CPA and cerebellum) was normal. The orbits mastoid air cells were normal. The visualized paranasal sinuses were normal. From the CT scan of the head without contrast, it was concluded that there was an ICH in the left thalamus with an estimated volume of ±9cc, IVH filled the entire ventricular system, cerebral edema with subfalcine herniation to the right as far as ±3mm, and mild communicating hydrocephalus. CT angiography was not performed to the patient due to limited facilities. The patient was treated together by clinicians from neurology, pulmonology, neurosurgery, and internal medicine.

Table 2. Laboratory Result of Patient 2

Laboratory Test	**10/01/2021**	**11/01/2021**	**13/01/2021**	**22/01/2021**	**Normal Value**
Rapid Test Antibody SARS-COV2	**Reactive**				
Nasopharyngeal swab (RT-PCR)		**Positive**			
Hb (g/dL)	13.8		12.8	11.9	13.4-17.7
Erythrocytes (10^6/uL)	4.64		4.23	3.85	4-5.5
Leucocytes (10^3/uL)	11.91		9.36	**20.29**	4.3-10.3
Hematocrit (%)	37.80		47.1	32.9	40-47
Platelets (10^3/uL)	239		160	318	142-424
Blood glucose (mg/dL)	120		115	99	
Blood gas analysis					
pH	7.39		7.29		7.35-7.45
pCO2 (mmHg)	32		39.7		35-45
pO2 (mmHg)	70.8		140.4		80-100
HCO3 (mmol/L)	19.6		19.4		21-28
O2 saturation (%)	**94.4**		99.7		>95
CRP (mg/dL)	0.16		**0.92**	**2.15**	<0.3
Procalcitonin (ng/mL)	0.07		0.16		<0.5
Total cholesterol (mg/dL)			170		60-100
Triglycerides (mg/dL)			123		<150
HDL (mg/dL)			57		>50
LDL (mg/dL)			**112**		<100
D-Dimer (mg/L FEU)	0.38		**0.66**	**1.61**	<0.5
Ferritin (ng/mL)			**423.10**	**853.40**	13-150

Case 3

A 61 years old male, came with complaints of left hemiparesis suddenly when the patient was about to pray. Complaints are also accompanied by slurred speech and headache. There were no complaints of seizures, vomiting, fever, shortness of breath, cough, runny nose, or painful swallowing. History of contact with COVID-19 patients was denied. The patient had no history of hypertension, diabetes mellitus, heart disease, or previous stroke. Patient has been hospitalized for 14 days because of confirmed COVID-19 and had been discharged from the hospital 6 days before the current complaint occurred.

At the ER of Saiful Anwar Hospital, screening for COVID-19 was carried out with a rapid antibody test with reactive results. The results of the RT-PCR examination showed positive for COVID-19. CRP and D-Dimer were increased, Procalcitonin and ferritin were normal. Chest X-Ray results showed congestive pulmonary and aortic sclerosis. A CT scan of the head without contrast showed a hypodense lesion with ill-defined borders on the right frontotemporal lobe, right lentiform nucleus, right insular cortex with an insular ribbon sign, dense arterial sign on the right MCA. Sulci and sylvian fissure narrowed around the lesion. White and gray matter differentiation is blurred around the lesion. The right lateral ventricle is narrowed, the left lateral ventricles, 3rd ventricle, 4th ventricle, and cisterns are dilated. There was no apparent midline shift. Infratentorial (pons, mesencephalon, CPA and cerebellum) was normal. A calcification was seen in right and left internal carotid arteries. The orbits and mastoid air cells were normal. Normal paranasal sinuses. From the results of a CT scan of the head without contrast, it was concluded that there was an acute infarction in the right frontotemporal lobe, right lentiform nucleus, right insular cortex supporting MCA embolism of the M1 prelenticulostriate segment with ASPECT Score (4/10), senile brain atrophy, and arteriosclerosis bilateral internal carotid arteries. The patient was treated together by clinician from the neurology and pulmonology department. CT angiography and thrombectomy were not performed to the patient due to limited facilities.

Table 3. Laboratory Result of Patient 3

Laboratory Test	31/01/2021	01/02/2021	04/02/2021	06/02/2021	Normal Value
Rapid Test Antibody SARS-COV2	**Reactive**				
Nasopharyngeal swab (RT-PCR)		**Positive**			
Hb (g/dL)	13.7			13.1	13.4-17.7
Erythrocytes (10^6/uL)	4.36			4.13	4-5.5
Leucocytes (10^3/uL)	9.00			7.20	4.3-10.3
Hematocrit (%)	39.4			37.2	40-47
Platelets (10^3/uL)	279			299	142-424
Blood glucose (mg/dL)	128			127	
Blood gas analysis					
pH	7.43			7.36	7.35-7.45
pCO2 (mmHg)	28.9			38.8	35-45
pO2 (mmHg)	323.5			56.3	80-100
HCO3 (mmol/L)	19.3			22.2	21-28
O2 saturation (%)	99.9			87.7	>95
CRP (mg/dL)	**6.93**			**2.64**	<0.3
Procalcitonin (ng/mL)	0.06			0.03	<0.5
Total cholesterol (mg/dL)			**215**		60-100

Triglycerides (mg/dL)			152		<150
HDL (mg/dL)			**36**		>50
LDL (mg/dL)			**171**		<100
Fibrinogen (mg/dL)				**477**	154.3-397.9
D-Dimer (mg/L FEU)				**2.91**	<0.5

DISCUSSION

The type of stroke that occurs in cases of COVID-19 is generally an ischemic stroke. Hemorrhagic stroke in COVID-19 cases can occur but with a less frequent incidence. Rohit Bhatia, et al, in September 2020, stated that of 30 relevant articles of stroke in Coronavirus Disease 2019, involving 115 patients with acute or sub-acute stroke with COVID-19, 87.8% of the patients had ischemic stroke, and 5.2% were intracerebral hemorrhagic strokes.[4]

Similar to the study of Rohit Bhatia, et al, in June 2020, the study conducted by Dhamoon MS, et al published by the American Heart Association in January 2021 also stated that of the 105 stroke patients with positive COVID-19 observed, 79.1% of them was an ischemic stroke, while 15.2% was an intracerebral hemorrhage stroke.[3] In the cases we reported, case 1 and case 3 were ischemic stroke types. CT scan in case 1 showed a visible sulcal effacement in the right insular lobe and right parietal lobe, that suitable with ischemia in the right insular lobe and right parietal lobe, whereas in case 3 there was a hypodense lesion with ill-defined borders on the right frontotemporal lobe, right lentiform nucleus, right insular cortex with insular ribbon sign, dense arterial sign in the right MCA, concluded as an acute infarction in the right frontotemporal lobe, right lentiform nucleus, and right insular cortex suitable with prelenticulostriate segment I MCA embolism. Case 2 is a type of hemorrhagic stroke, the CT scan showed hyperdense lesions with perifocal edema in the left thalamus, hyperdense lesions filled the right left lateral ventricle, third ventricle, and fourth ventricle, widening of the right and left lateral ventricles rounded anterior horn and opened of temporal horn with interstitial edema, and a midline shift to the right, and concluded as ICH in the left thalamus, IVH filling the entire ventricular system, cerebral edema with subfalcine herniation to the right, and mild communicating hydrocephalus.

Dhamoon MS, et al also mentioned that in cases of stroke that occurred in positive COVID-19 patients, the most location of the ischemic stroke was the parietal lobe (43.8%), frontal lobe (34.9%), temporal lobe (28.6%). , occipital lobe (26.7%), cerebellum (20.0%), and basal ganglia (9.5%).[4] Meanwhile, in cases of COVID-19 with hemorrhagic stroke, the location is in the frontal lobe (56.3%), parietal lobe (31.2%), basal ganglia (31.2%), temporal lobe (25.0%), and occipital lobe (25.0%).[3] In the case we reported, the patient in case 1 had an ischemic stroke of the right insular lobe and parietal lobe. The patient in case 2 had ICH in the left thalamus (basal ganglia), and IVH filled the entire ventricular system. The patient in case 3 had an ischemic stroke in the right frontotemporal lobe, right lentiform nucleus, and right insular cortex. These cases are consistent with the previous study conducted by Dhamoon MS, et al.

The relationship between COVID-19 cases and the occurrence of stroke is still not certainly known, but there are several things that may be related to the occurrence of stroke in COVID-19 cases. Among them are viral neurotropism, endothelial dysfunction, coagulopathy, inflammation, and other potential mechanisms such as cardio embolism from myocardial injury related to viral infection.[5-8]

The systemic inflammatory response caused by infection can lead to endothelial dysfunction and induce procoagulants. Inflammatory response in COVID-19 patients associated with multiple pathways. Elevated levels of D-dimer in patients with acute ischemic stroke onset also support that SARS-CoV-2 can induce an acute inflammatory response in the vessel wall and trigger a hypercoagulable state.[9,10]

Atherosclerosis in patients with COVID-19 infection may increase the risk of ischemic

stroke because the infectious virus has the potential to destabilize atherosclerotic plaques through systemic inflammatory responses, cytokine storms, and changes in the specific immune cells polarization towards an unstable phenotype. In addition, COVID-19-infected patients with cardiovascular comorbidities may have a potential risk of dysrhythmias, which can lead to cardioembolism and increase the risk of ischemic stroke.[9,10]

The mechanism of hemorrhagic stroke in COVID-19 patients is not certainly known as well. Zilan Wang, et al. stated that one of the possible causes of hemorrhagic stroke in COVID-19 patients is a cytokine storm, as well as an increase in blood pressure caused by a decrease in ACE-2 expression. ACE-2 is an important enzyme in the renin-angiotensin system (RAS) which regulates blood pressure, fluid and electrolyte balance, and vascular resistance. SARS-CoV-2 that binds to the ACE-2 receptor will decrease the ability of ACE-2 to lower blood pressure. Decreased expression of ACE-2 during SARS-CoV-2 infection also causes an increase in serum angiotensin-2 which can impair endothelial function and cause dysregulation of blood pressure. This allows the occurrence of hemorrhagic stroke in COVID-19 patients.[9,10]

CT scans have an important role in determining the type of stroke and its location, both in COVID-19 and non-COVID-19 patients. CT scan is sensitive enough to detect lesions such as masses, abscesses, and acute bleeding, although it is not sensitive enough to detect ischemic stroke, especially if it is small, acute, or located in the posterior fossa. The purpose of a CT scan in stroke cases is to detect bleeding and rule out other diseases with symptoms resembling a stroke.[10,11] CT scans are widely chosen as the main modality in examining stroke patients because they are good at detecting bleeding, more readily available, faster and cheaper to operate compared to MRI.

CONCLUSION

Types of stroke in COVID-19 patients can appear as different types of stroke. In general, what happens is an ischemic stroke, but hemorrhagic strokes can also occur, with a less frequent incidence. Of the three cases we reported, two of them were ischemic strokes, while one case was hemorrhagic stroke.

CT scan is an important imaging modality in stroke cases, both COVID-19 and non-COVID-19 cases. CT scan is good at detecting the presence of bleeding, more widely available, faster and cheaper to operate than MRI.

Until now the exact correlation between stroke and COVID-19 is still unclear, but there are several theories that might cause the manifestation of stroke in COVID-19 patients. Among them are Viral Neurotropism, Endothelial Dysfunction, Coagulopathy, and Inflammation. Further research is needed to explain the exact cause of the manifestation of stroke in COVID-19 cases.

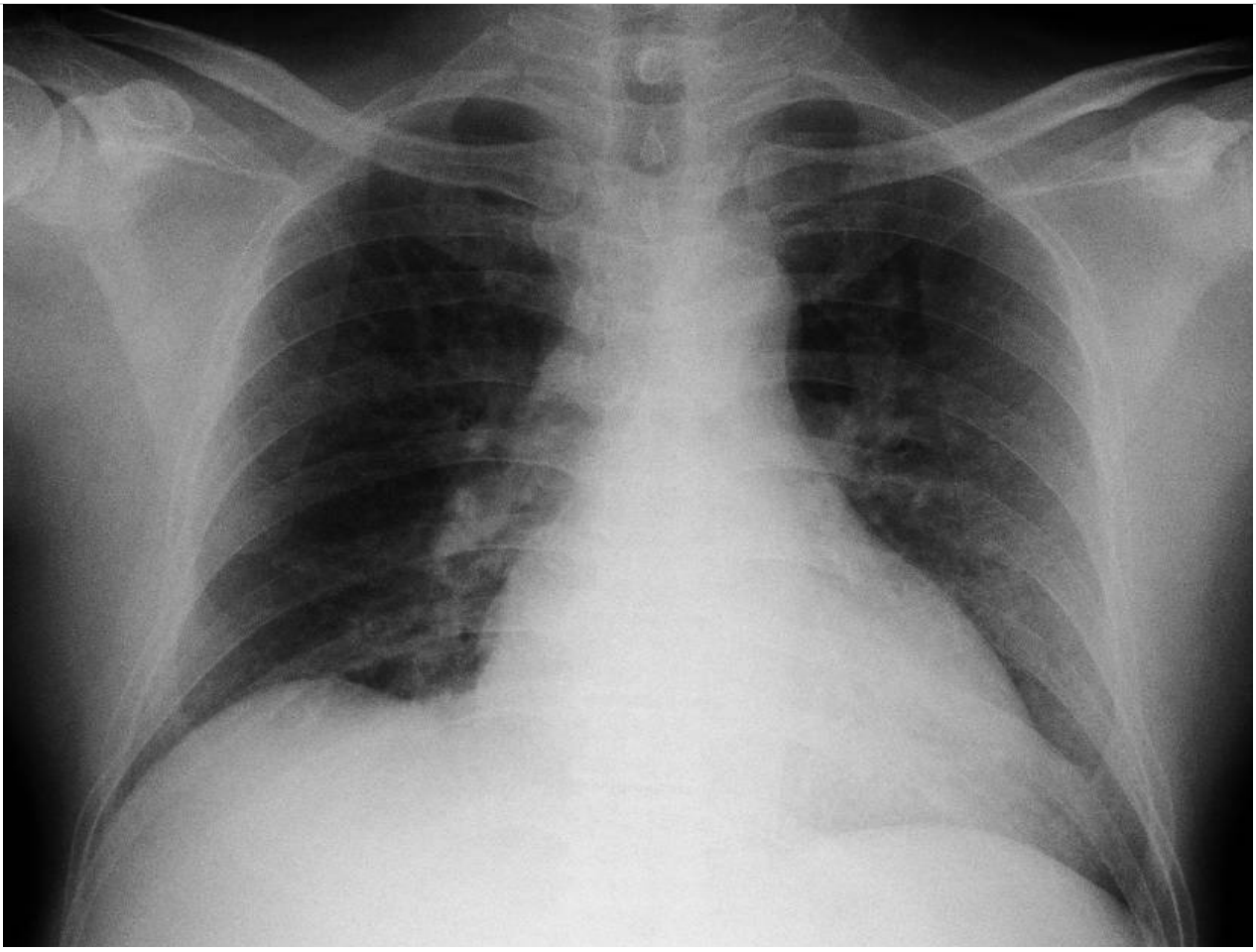


Figure 1. Chest X-Ray result of patient in Case 1. Chest X-Ray was within normal limit, no sign of pneumonia was found.

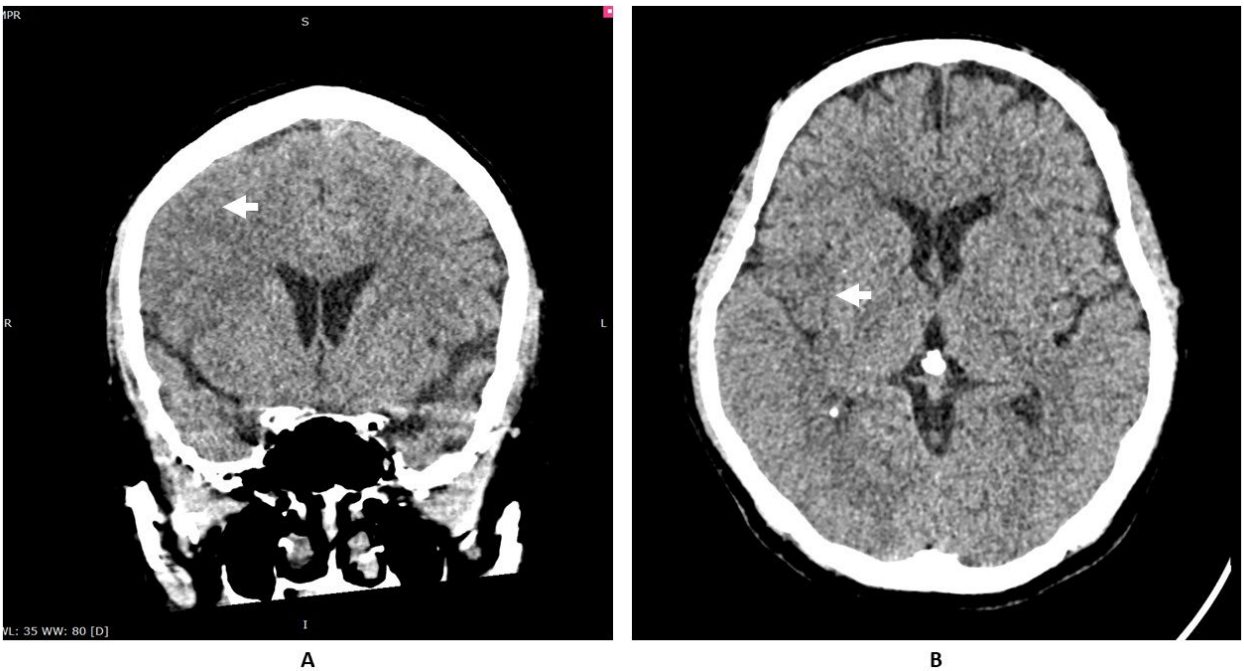


Figure 2. Head CT scan without contrast of patient in Case 1. (A) Sulcal effacement of the right parietal lobe (white arrow); (B) Sulcal effacement of the right insular lobe (white arrow).

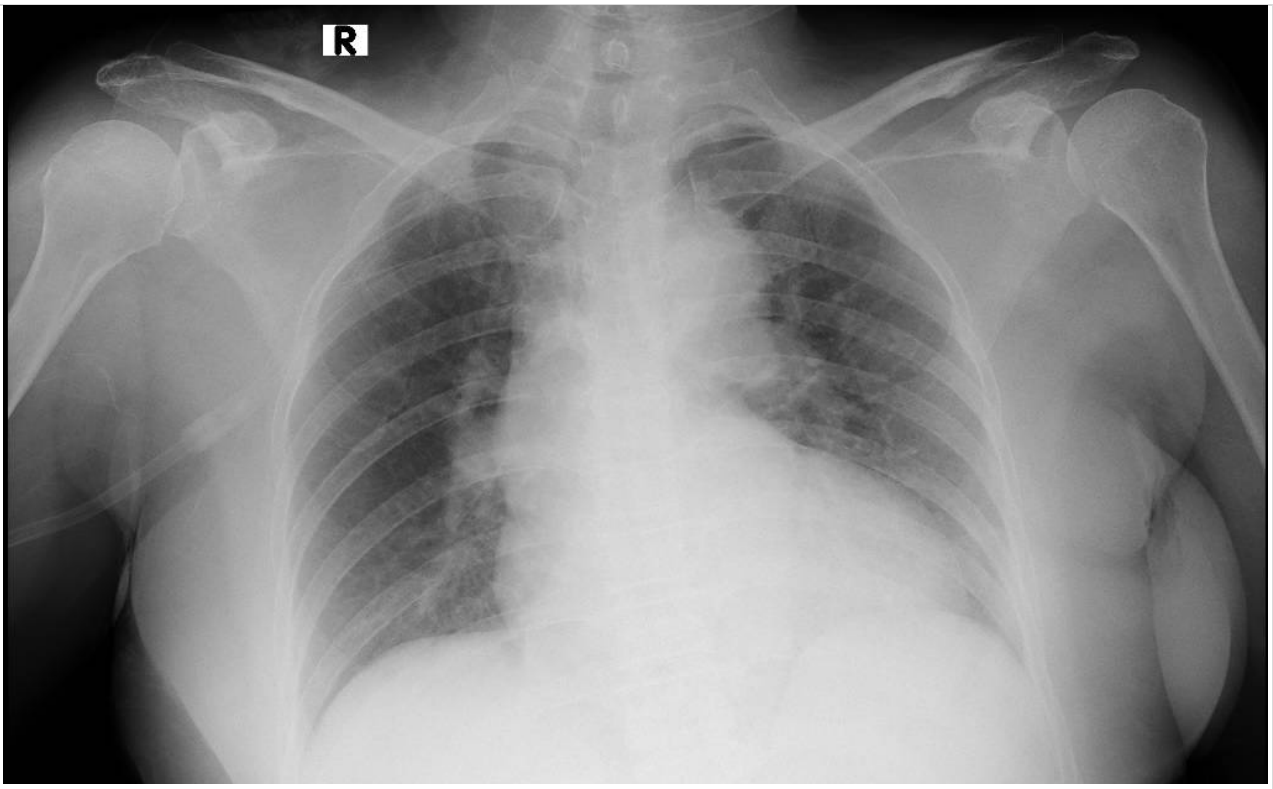
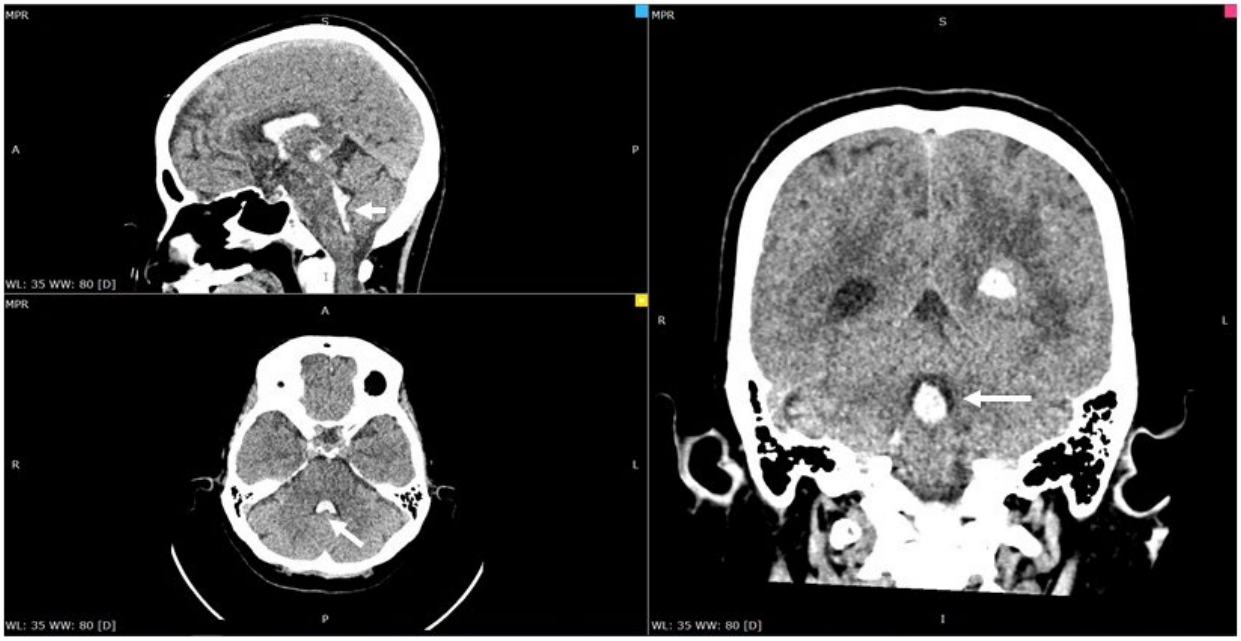


Figure 3. Chest X-Ray result of patient in Case 2 Chest X-Ray showed cardiomegaly, aortic elongation, and pulmonary congestive.

A



B

Figure 4. Head CT scan without contrast of patient in Case 2.
(A) Appearance of hyperdense lesion with perifocal edema of the left thalamus (white arrow), a hyperdense lesion filling the left right lateral ventricle (white dotted arrow) and 3rd ventricle (black arrow), and a midline shift to the right.
(B) Appearance hyperdense lesion filling the 4th ventricle (white arrow).

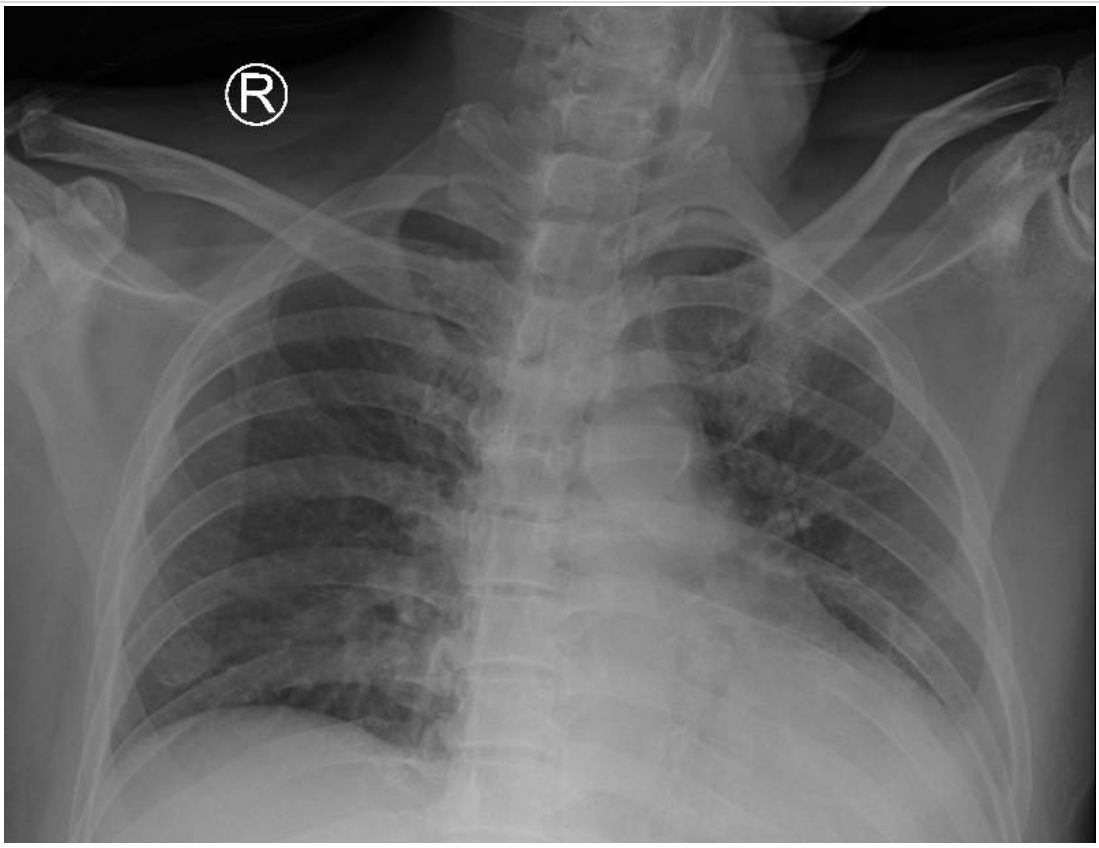


Figure 5. Chest X-Ray result of patient in Case 2. Chest X-Ray showed congestive pulmonary and aortic sclerosis.

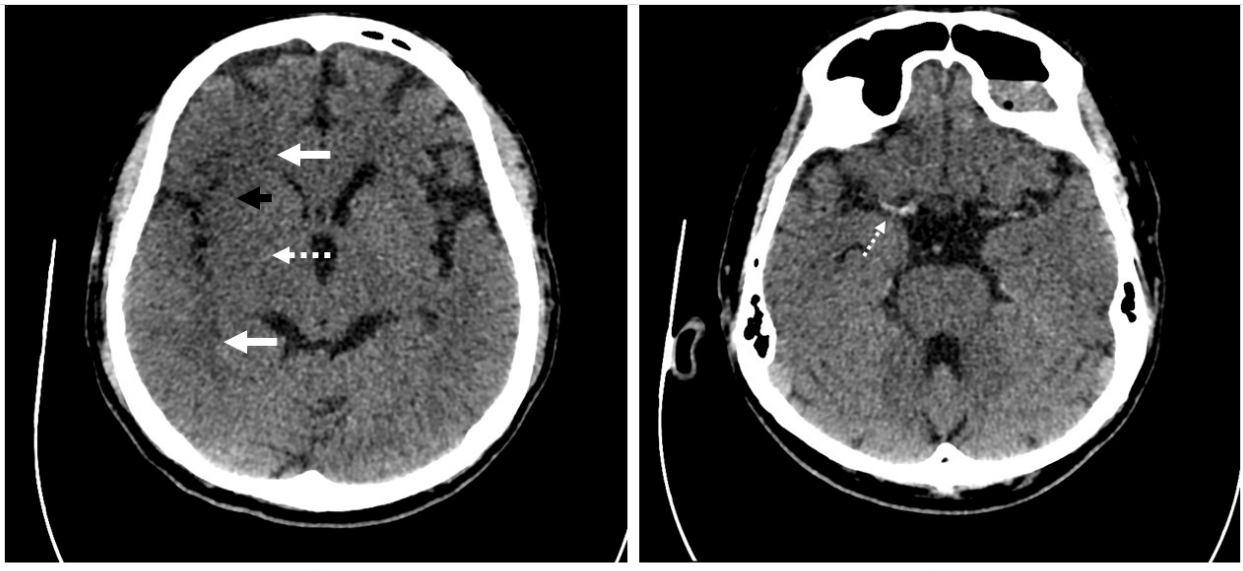


Figure 6. Head CT scan without contrast of patient in Case 3
(A) There were indistinct hypodense lesions on the right frontotemporal lobe (white arrow), right lentiform nucleus (white dotted arrow), and right insular cortex with insular ribbon sign (black arrow);
(B) Appearance of dense arterial sign on the right MCA (white dotted arrow).

REFERENCES

1. KEMENKES RI. Pedoman Kesiapsiagaan Menghadapi Infeksi Novel Corona Virus (COVID-19) Revisi ke–5. 2020.
2. World Health Organization. Clinical management of COVID-19: interim guidance, 27 May 2020.World Health Organization; 2020.
3. Dhamoon MS, Thaler A, Gururangan K, Kohli A, Sisniega D, Wheelwright D, Mensching C, Fifi JT, Fara MG, Jette N, Cohen E. Acute Cerebrovascular Events With COVID-19 Infection. Stroke. 2021 Jan;52(1):48-56.
4. Bhatia R, Pedapati R, Komakula S, Srivastava MP, Vishnubhatla S, Khurana D. Stroke in coronavirus disease 2019: a systematic review. Journal of stroke. 2020 Sep;22(3):324.
5. Reddy ST, Garg T, Shah C, Nascimento FA, Imran R, Kan P, Bowry R, Gonzales N, Barreto A, Kumar A, Volpi J. Cerebrovascular disease in patients with COVID-19: a review of the literature and case series. Case reports in neurology. 2020;12(2):199-209.
6. Szegedi I, Orbán-Kálmándi R, Csiba L, Bagoly Z. Stroke as a Potential Complication of COVID-19-Associated Coagulopathy: A Narrative and Systematic Review of the Literature. Journal of clinical medicine. 2020 Oct;9(10):3137.
7. Spence JD, De Freitas GR, Pettigrew LC, Ay H, Liebeskind DS, Kase CS, Del Brutto OH, Hankey GJ, Venketasubramanian N. Mechanisms of stroke in COVID-19. Cerebrovascular Diseases. 2020;49(4):451-8.
8. Zhang S, Zhang J, Wang C, Chen X, Zhao X, Jing H, Liu H, Li Z, Wang L, Shi J. COVID-19 and ischemic stroke: Mechanisms of hypercoagulability. International Journal of Molecular Medicine. 2021 Mar;47(3):1-.
9. Aulia, S., Arisetijono, E., & Yueniwati, Y. Possibility of COVID-19 Reinfection with Clinical Manifestation of Stroke: A Case Report. Journal Of Cardiovascular, Neurovascular & Stroke, 2021 3(2), 9-15. https://doi.org/10.32896/cvns.v3n2.9-15
10. Wang Z, Yang Y, Liang X, Gao B, Liu M, Li W, Chen Z, Wang Z. COVID-19 associated ischemic stroke and hemorrhagic stroke: incidence, potential pathological mechanism, and management. Frontiers in Neurology. 2020 Oct 27; 11:1152.
11. Yew KS, Cheng EM. Diagnosis of acute stroke. American family physician. 2015 Apr 15;91(8):528-36.

THE "BUTTERFLY WINGS" AND MIDBRAIN "V" SIGN OF ARTERY OF PERCHERON INFARCTION

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Keywords: Artery of Percheron, Midbrain, Butterfly wings, Thalamic infarct.

CONSENT STATEMENT
All parties gave their informed consent prior to their inclusion in this write up. Details that may disclose the identity of the patient in this manuscript have been omitted. Written consent of the subject/guardian/spouse has been obtained prior to submission.

An 80-year-old woman with history of hypertension presented to the emergency department following a fall. Her mental status quickly deteriorated and became obtunded. She was stuporous, and unresponsive to verbal stimuli. She had minimally reactive pupils and was moving extremities to painful stimuli. An MRI scan was performed following an unrevealing CT brain.

This case demonstrates classic imaging findings of ischemic stroke in the territory of the Artery of Percheron (AOP). The thalamus is mainly vascularized by the tubero-thalamic artery, thalamo-geniculate artery, paramedian thalamic artery and the posterior choroidal artery. These arterial branches arise from the posterior communicating artery and the posterior cerebral artery (PCA). Each of these major thalamic arteries has predilection for supplying a particular group of nuclei. The AOP is an anatomic variant where a single trunk arises off the P1 segment of PCA to supply both paramedian hemispheres of the thalamus and/or rostral midbrain(1).

MR imaging demonstrated symmetric infarctions of the bilateral paramedian thalami and rostral midbrain with additional ischemic foci involving the PCA (Figure 1). MRA showed partial occlusion of the basilar artery with beaded appearance suggestive of intracranial atherosclerosis (Figure 2). The mechanism of stroke in this case is likely due to hypoperfusion with artery-to-artery distal embolization. In one of the largest series of AOP infarcts, bilateral paramedian thalami and rostral midbrain involvement made up about 43% of cases(2). The midbrain V sign is also present in this case, characterised by hyperintense signal intensity along the pial surface of the midbrain interpeduncular fossa. This distinct pattern of V shaped hyperintensity has been described in 67% of AOP cases(2). The symmetrical hyperintensity involving bilateral rostral mesencephalon is also observed to resemble "butterfly wings".

Other vascular etiologies that can cause bilateral thalamic infarctions include top of the basilar syndrome and deep cerebral venous thrombosis. Both differential diagnoses have been excluded as the tip of the basilar artery was patent on MRA while patent flow voids were

seen within the internal cerebral veins and venous sinuses on MRI.

The distinct pattern of infarction in this case, along with the "butterfly wings" and mid brain "V" sign, should improve recognition of AOP infarction and assist with the neurologic evaluation and management of patients with thalamic strokes.

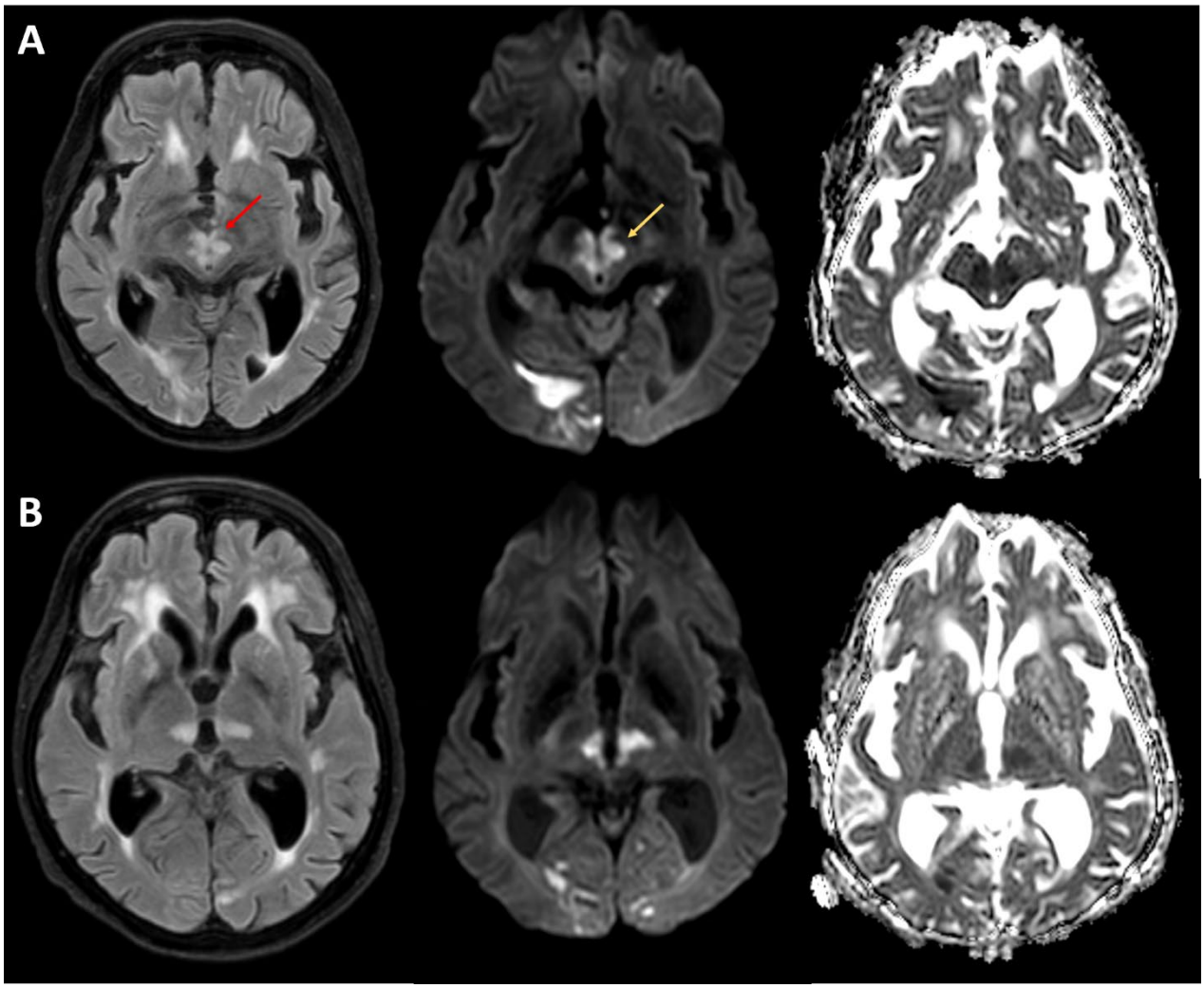

Figure 1:
Panel A showing FLAIR and DWI/ADC images at the level of the midbrain, demonstrating bilateral rostral midbrain infarction. Notice the hyperintense signal intensity along the pial surface of the midbrain interpeduncular fossa representing the V sign (red arrow). The symmetrical hyperintensity at the rostral mesencephalon resembled "butterfly wings" as a whole.

Panel B showing FLAIR and DWI/ADC images at the level of the thalamus demonstrating symmetrical paramedial thalamic infarction.

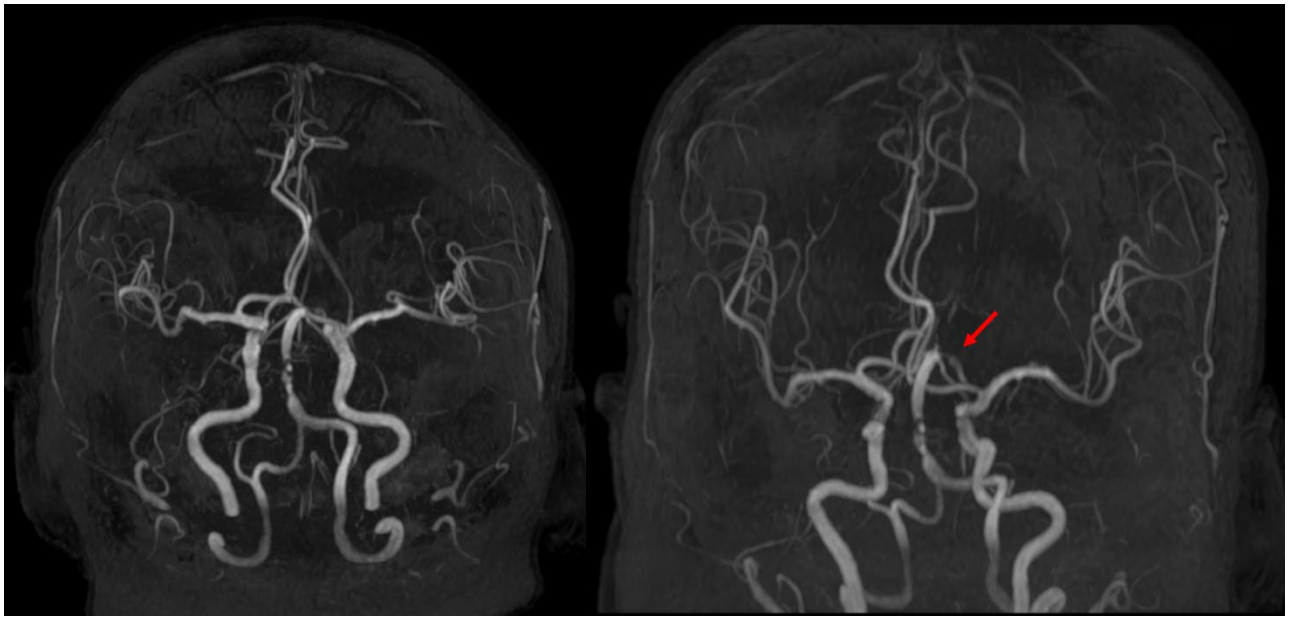

Figure 2:
Magnetic resonance angiography showing partial occlusion and beading of the basilar artery suggesting that intracranial atherosclerosis as the aetiology of the stroke. Narrowing of the bilateral P1 segment of the PCA artery was also noted (red arrow).

REFERENCES

1. Chen XY, Wang Q, Wang X, Wong KS. Clinical Features of Thalamic Stroke. Curr Treat Options Neurol. 2017;19(2).
2. Lazzaro NA, Wright B, Castillo M, Fischbein NJ, Glastonbury CM, Hildenbrand PG, et al. Artery of percheron infarction: Imaging patterns and clinical spectrum. Am J Neuroradiol. 2010;31(7):1283–9.

UNILATERAL LOSS OF THE SWALLOW TAIL SIGN IN A PATIENT WITH IDIOPATHIC PARKINSON'S DISEASE

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A 66-year-old man with underlying hypertension and dyslipidemia presented with bilateral hand tremor for one year. He also noticed difficulty in initiating movement and slowness in activities of daily living. On examination, he was noted to have mask-like facies with reduced blinking and monotonous speech. There was presence of resting pill-rolling tremor, bradykinesia, and cogwheel rigidity which was present bilaterally but worse on the left upper limb. Gait assessment revealed difficulty in standing up, shuffling gait with reduced arm swing which was more prominent on the left side, and turning in numbers. No cerebellar signs and supranuclear palsy were present. He admits having progressive memory loss with no hallucinations, but he was unsure of the onset and the duration. Hence a magnetic resonance imaging (MRI) was arranged, in order to rule out the diagnosis of Parkinson-plus syndromes, in this case the possibility of Lewy Body Dementia. The susceptibility weighted imaging (SWI) showed loss of the swallow tail sign on the right side [Figure 1]. The clinical presentation, supplemented by the imaging findings were concluded to be pathognomonic of idiopathic Parkinson's disease (IPD), Hoehn & Yahr stage 2. He was started on levodopa and benserazide twice daily with improvement of symptoms.

The nigrosomes are primary subregions of the substantia nigra where dopaminergic cells are lost in IPD. Within these nigrosomes, maximal cell loss occurs in nigrosome-1; the largest subgroup of nigrosomes. Normally, they appear as a SWI-hyperintense area surrounded by hypointensity within the dorsolateral substantia nigra, akin to a swallow's tail. In one study, poor visualization of nigrosome-1 was significantly associated with higher motor asymmetry in the contralateral side (sensitivity 98.5%, specificity 93.6%, positive-predictive value 98.3%, negative-predictive value 98.3% and an accuracy of 96%) [1]. Noh et al [2] showed that abnormality involving nigrosome-1 can be detected at 3T MR imaging with an accuracy of 94.6%. Liu et al [3] in their study demonstrated the potential application of the absence of the swallow tail sign in determining disease progression in Parkinson's disease, and in the diagnosis of parkinsonism. With regards to the diagnosis of Lewy Body Dementia, an abnormal swallow tail sign has been found to potentially assist in the diagnostic work-up [4]. Due to the difficulty in diagnosis of early stage IPD, a loss of the swallow tail sign serves as a useful imaging biomarker to supplement the clinical diagnosis, as seen in our patient.

REFERENCES

1. Stezin A, Naduthota RM, Botta R, *et al*. Clinical utility of visualization of nigrosome-1 in patients with Parkinson's disease. *Eur Radiol* 2018; 28: 718-726.
2. Noh Y, Sung YH, Lee J, *et al*. Nigrosome 1 Detection at 3T MRI for the Diagnosis of Early-Stage Idiopathic Parkinson Disease: Assessment of Diagnostic Accuracy and Agreement on Imaging Asymmetry and Clinical Laterality. *AJNR Am J Neuroradiol* 2015; 36: 2010-16.
3. Liu X, Wang N, Chen C, et al. Swallow tail sign on susceptibility map-weighted imaging (SMWI) for disease diagnosing and severity evaluating in parkinsonism. Acta Radiologica 2020; 0(0): 1-9.
4. Shams S, Fallmar D, Schwarz S, et al. MRI of the Swallow Tail Sign: A Useful Marker in the Diagnosis of Lewy Body Dementia? AJNR Am J Neuroradiol 2017; 38: 1737-41.

FIGURE LEGENDS

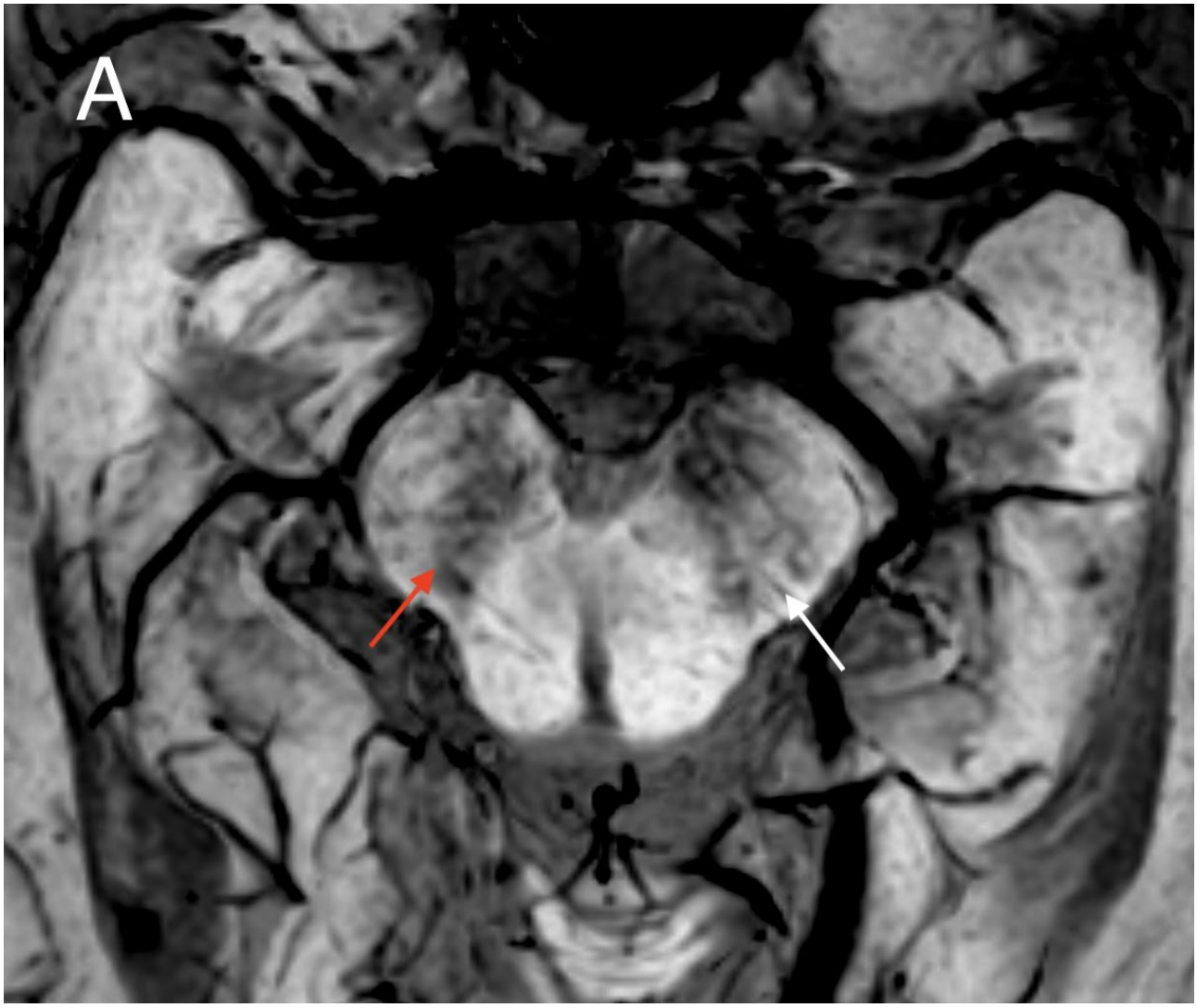
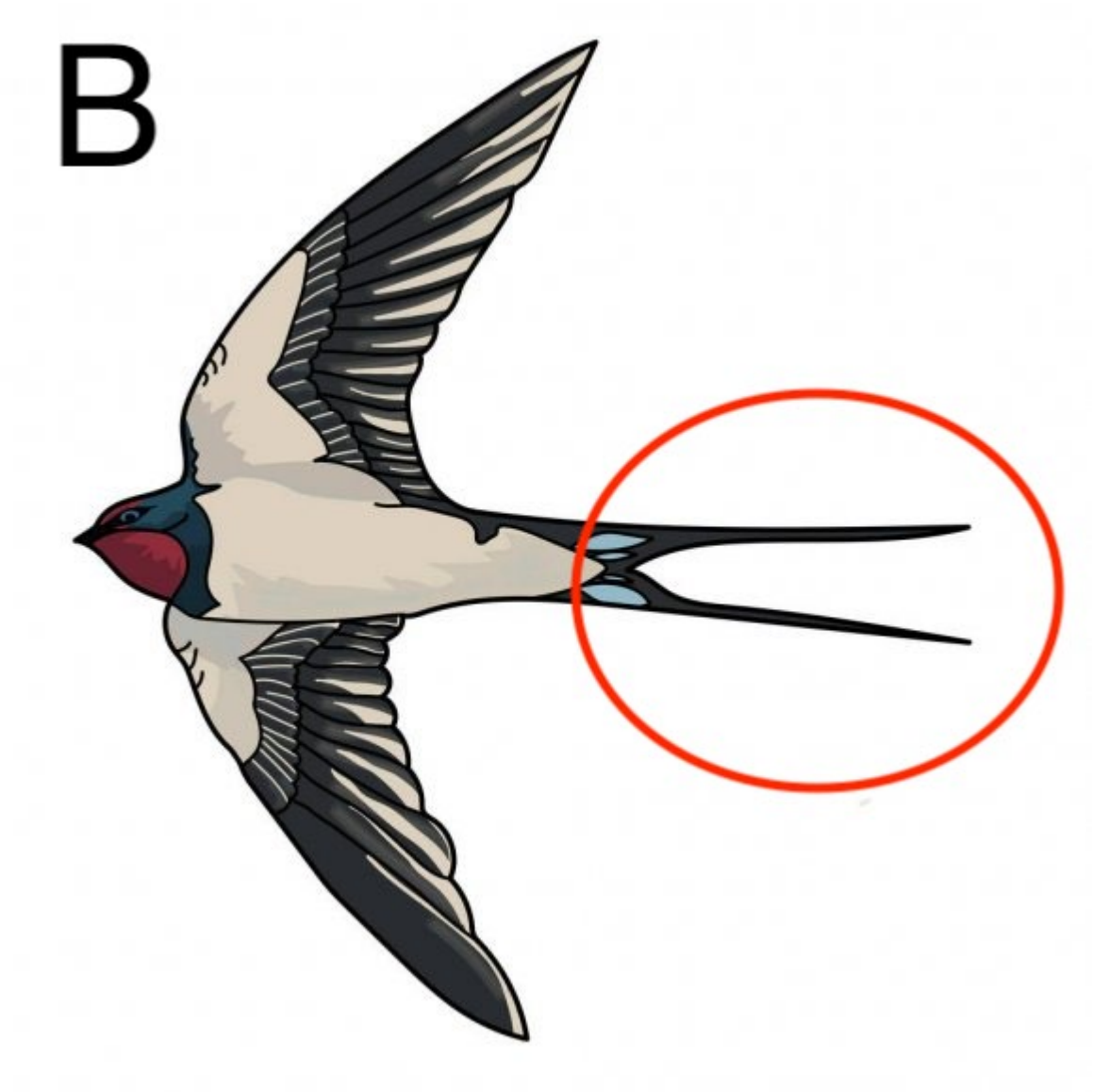
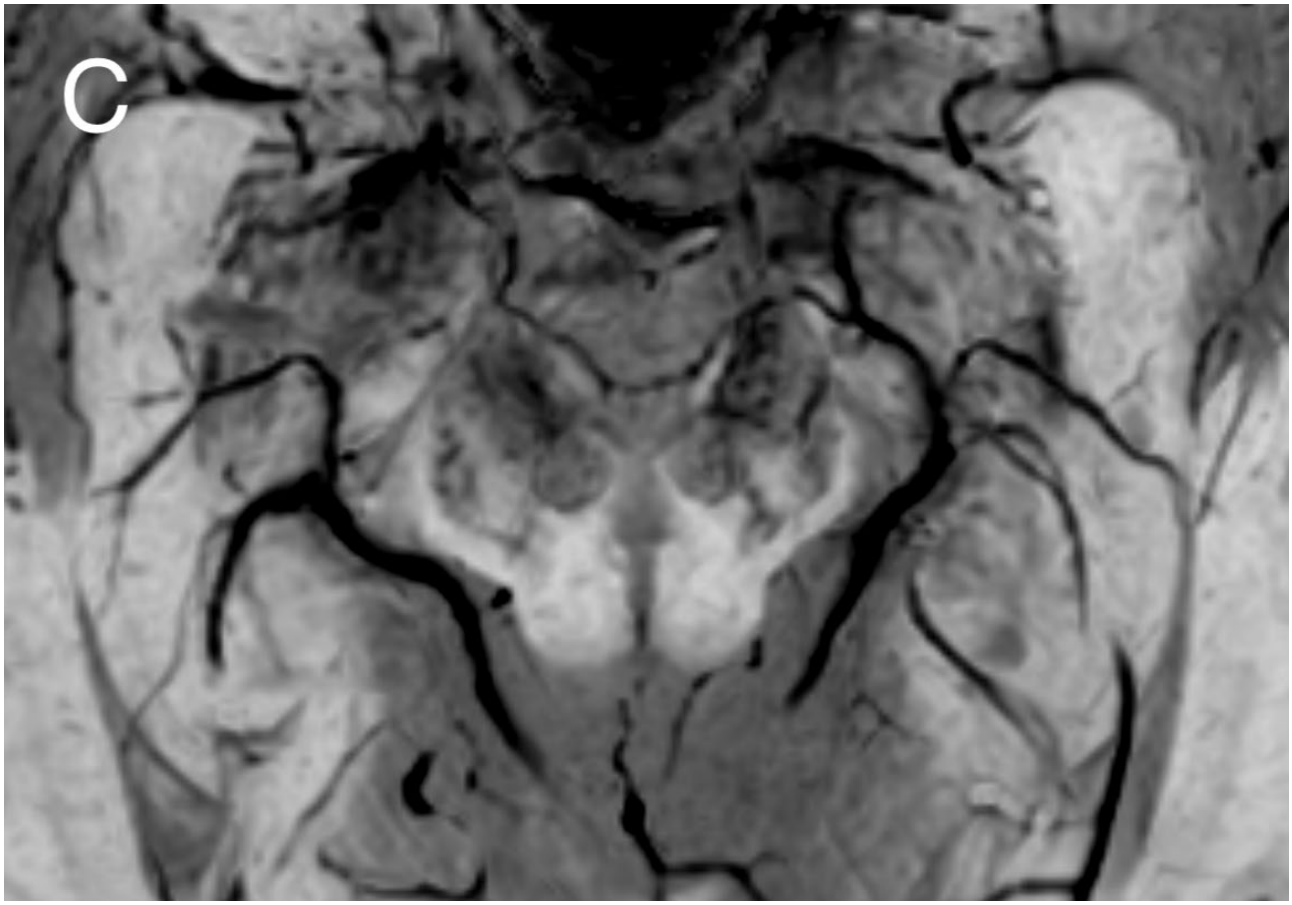


Figure 1
A – Axial susceptibility weighted imaging (SWI) image at the level of the dorsolateral substantia nigra shows normal swallow tail sign on the left (white arrow), with absence on the contralateral side (red arrow). In normal individuals, normal high SWI signal is seen, surrounded by the hypointensity of the substantia nigra.



B – Pictorial representation of the swallow's tail (in red circle), from which this imaging sign is derived.



C – Axial susceptibility weighted imaging (SWI) at the level of the dorsolateral substantia nigra (of a normal patient, using the same scanner) shows normal swallow tail sign bilaterally. Note presence of the hyperintense signal (denoting presence of nigrosomes) bilaterally surrounded by the hypointensity of the substantia nigra, as opposed to Figure 1A.

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