Malaysia Stroke Conference 2022

MSC Abstracts 3: E-poster Presentation

DOI: https://doi.org/10.32896/cvns.v4n4.36-45
Published: 31.12.2022

STROKE IN SEVERE COVID-19 INFECTION: A CROSS-SECTIONAL STUDY

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ABSTRACT

Introduction: Stroke has been identified as a neurological sequel of COVID-19 infection but there is limited data in local setting. This study aims to identify the prevalence, characteristics and in-hospital outcomes of patients who developed stroke during their hospitalization for severe COVID-19 pneumonia. **Methodology:** Patients with severe COVID-19 infection who were transferred out of ICU or general medical wards to the subacute geriatric ward Kuala Lumpur Hospital from 1st January 2021 to 31st December 2021 were included. Severe COVID-19 infection was defined as COVID-19 infection Clinical Category 4 or 5. Patients' characteristics were investigated for their association with stroke. In-hospital outcomes studied were HAP, VTE, AKI, Delirium, GI bleed, Pressure injury. Acute urinary retention, UTI, Psychological disorder, Poor functional recovery (Modified Barthel Index <60 upon discharge), Dysphagia, Institutionalization and Death. **Result:** 282 patients were included with a mean age of 63 (SD 15.3) and 137(48.7%) were females. 35(12.4%) developed acute ischaemic stroke. Acute ischaemic stroke was not associated with increased age, individual comorbidities, and comorbidity burden. Acute ischaemic stroke was not more common with those who had COVID-19 related cardiovascular complications such as acute coronary syndrome, cardiac arrhythmia, heart failure or myocarditis. However, higher rate of dysphagia, delirium, poor functional recovery, and mortality were observed in acute ischaemic stroke patients hospitalized for severe COVID-19 infection. **Conclusions:** The lack of association between traditional cardiovascular risk factors with acute ischaemic stroke in patients with Severe COVID-19 infection may suggest presence of alternative pathogenesis. Nevertheless, acute ischemic stroke in COVID-19 infection was associated with poorer outcome and warrant comprehensive management.

THE PECULIAR STROKE SYNDROMES

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ABSTRACT

Background: Midbrain stroke syndrome is a rare cluster of symptoms accounting to as low as 0.9% of all cerebrovascular accidents recorded. It can be challenging to diagnose due to the great variability of symptom presentations and yet appear to be rarely in the literature. **Case presentation:** A 55 years old gentleman with no known comorbid presented with a history of unsteady gait and slurring of speech with hypertensive crisis episodes up to 220/110. On examination, unequal pupil, and left eye ptosis along with contralateral hemiparesis were apparent. Subsequent CTA reported a left PCA thrombosis with left occipital, midbrain, and left cerebral peduncle infarction with no evidence of PCOM. He was then diagnosed as Weber Syndrome and subsequently transferred to rehabilitation ward for intensive rehabilitation. Thereupon, it was striking during activities done that he struggled with his balance and coordination, adding ataxia into his list of impairments. Hence, the diagnosis of Benedikt Syndrome was completed and established. **Discussion:** Generally, this syndrome causes an ipsilateral cranial nerve palsy and contralateral hemiplegia or hemiparesis with a characteristic manifestation according to the specific involved area. Among the commonest midbrain stroke syndromes are Weber Syndrome and Benedikt Syndrome. The distinction between the two is the presence of cerebellar ataxia. Benedikt Syndrome characterised by ipsilateral oculomotor nerve palsy, contralateral hemiparesis, and contralateral cerebellar ataxia. Whereas Weber Syndrome causing ipsilateral third nerve palsy with contralateral hemiparesis. Thus, a thorough examination is crucial. **Conclusion:** This case highlights a dilemma in establishing the accurate diagnosis of a midbrain stroke syndrome. Considering the pronounced patent of CVA, the other subtle fragments of the disease were often bypassed. Therefore, the understanding of this disease including all its customary and rarity is pivotal to ensure the accurate diagnosis made and the best outcomes generated.

FIBROMUSCULAR DYSPLASIA IN A YOUNG STROKE

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ABSTRACT

Background: Fibromuscular Dysplasia (FMD) is an underrecognized but important cause of stroke in young female Asian populations. It manifests as a non-inflammatory arterial disease with beading, stenosis, aneurysm, dissection, and arterial tortuosity. **Objectives:** We report a case of young stroke with multiple arterial aneurysms. **Case presentation:** This is a 32-year-old lady with young hypertension who presented initially with unstable angina. Coronary angiogram revealed aneurysmal coronary arteries. A year later, she presented with isolated right cranial nerve sixth palsy. CT and MR angiography found fusiform aneurysm of left vertebral artery (V4), stenoses and beaded appearance of L3-level lumbar arteries and bilateral renal interlobar arteries. Her DSA additionally showed right internal carotid artery cavernous segment saccular aneurysm. She had 2 cerebrovascular events in 2022; left lacunar stroke and transient ischemic attack-right-sided weakness with aphasia. NCCT Brain noted old lacunar infarct. CTA brain showed recurrent aneurysmal disease and dissection of left VA and new fusiform aneurysms were at basilar artery and right VA. She recovered with no neurological deficit. She had no associated connective tissue disease features, hematological abnormality, systemic or constitutional symptoms to suggest vasculitis as alternative diagnosis. Correlating with radiological findings and manifestations of renovascular hypertension and cerebrovascular events, diagnosis of FMD was made. **Conclusion:** Prevalence of FMD remains unknown1; clinical research is rare in Asian populations. Mainstay of treatment includes controlling risk factors, optimising blood pressure, and preventing ischemic events with medical treatment or revascularization

EXTENSIVE CORPUS CALLOSUM INFARCT AS AN UNUSUAL PRESENTATION IN TOTAL ANTERIOR CIRCULATION INFARCT STROKE: A CASE REPORT

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ABSTRACT

Background: Corpus callosum is the largest commissural fibres which connects both the cerebral hemispheres cortex, and it is the largest white matter tract in the brain. Due to its abundant vascular supply, ischemic stroke at this site is relatively rare. We present a case of extensive corpus callosum infarction presenting as acute stroke. **Case presentation:** A 50-year-old gentleman, active smoker with underlying hypertension, diabetes mellitus, dyslipidaemia presented with sudden onset of right body weakness on 22/11/21, 6am. He was found lying on floor, unable to speak associated with right facial asymmetry. Upon presentation, he was aphasic with dense right hemiparesis (power 0/5), NIHSS:12. CT brain showed extensive corpus callosum, bilateral centrum semi vale and left head of caudate nucleus infarct, CTA brain, RI brain with MRA TOF showed long segment bilateral ICAs occlusion with acute infarct of the genu-body of bilateral corpus callosum, corona additament basal ganglia and bilateral internal watershed zone. Posterior circulation supplying the ACA-MCA. He was hence started on double antiplatelets medication for 3 months followed by single antiplatelet medication was normal sinus rhythm with heart rate of 81bpm. 24-hour HOLTER monitoring was rescheduled for him. During the follow up, his NIHSS remains static of 12 with MRS 5. **Conclusion:** Large artery atherosclerosis has been identified as common aetiology for genu and body of corpus callosum infarct; embolism is more frequent for splenium corpus callosum infarct. In this case, Moyamoya disease need to be considered in view of the neuroimaging showing cerebral infarction primarily involving subcortical regions and CTA brain findings as such above. However, the involvement of bilateral ICA stenosis in this case mainly involving the proximal ICA and there are not prominent basal or parenchymal collaterals seen. DSA scan of the brain is still the gold standard method for diagnosis of moyamoya disease.

THROMBOTIC THROMBOCYTOPENIA PURPURA CAUSING CONCURRENT CEREBRAL ISCHEMIA AND INTRACRANIAL BLEED: A CASE REPORT

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ABSTRACT

Background: Thrombotic thrombocytopenic purpura (TTP) is a rare, life-threatening disease which is often initially missed due to its extensive neurological and systemic presentation. **Case presentation:** A 55-year-old female presented with both acute ischemic and haemorrhagic stroke with normal initial laboratory investigations. However, in the ward, clinical and biochemical deterioration led to the diagnosis of TTP. With prompt diagnosis and extensive workup for both primary and secondary TTP, immediate treatment was delivered. We highlight the dilemma in managing concurrent ischemic and haemorrhagic strokes, which raises the possibility of worsening intracranial bleed should plasma exchange be instituted. Instead, we commenced plasma infusion and intravenous steroids, which led to biochemical and clinical improvement. **Conclusion:** Although plasma exchange is recommended for the treatment of TTP, plasma infusion is equally effective and thus should be considered as the first-line therapy, especially when plasma exchange is contraindicated or unavailable.

Keywords: ischemic stroke, haemorrhagic stroke, thrombotic thrombocytopenic purpura, plasma exchange, plasma infusion

STROKE CODE ACTIVATIONS IN HOSPITAL SEBERANG JAYA 3 YEARS EXPERIENCE

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ABSTRACT

Introduction: Stroke Code activation was introduced in Hospital Seberang Jaya, a government-based primary stroke centre in the state of Penang since 2019. **Objectives:** This abstract aim to provide an insight into the characteristics of stroke code activations in our hospital from year 2019 to 2021. **Methodology:** All Stroke Code activations from January 1, 2019, to December 31, 2021, were included in the study. Data were extracted from our local registry. **Result:** A total of 479 patients were recruited in this study: 292 males (61%) and 187 females (39%). Their ages range from 20 to 97 with a mean age of 59 years old. The number of stroke activations increased from 76 in 2019 to 192 in 2020 and 211 in 2021. Thrombolysis therapeutic yield were 34.2% (26/76) in 2019, 24.0% (46/192) in 2020 and 23.2% (49/211) in 2021. One third (32.2%, n=73) of the stroke activations turned out to be intracranial haemorrhage, which is an absolute contraindication for thrombolysis. The percentage of patients arriving to hospital via ambulances increased from 20% in 2019 to 41% in 2020 and 53% in 2021. The average time patients took from onset until reaching to hospital were 1 hour 40 minutes in 2019, 1 hour 56 minutes in 2020 and 1 hour 59 minutes in 2021, respectively. **Conclusions:** In the era of evidence-based medicine, stroke registry plays an important role in providing data-driven strategies to improve our stroke service and awareness, in order to improve clinical outcome.

IMPACT OF ATRIAL FIBRILLATION IN FUNCTIONAL OUTCOME FOR ACUTE STROKE

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ABSTRACT

Introduction: Stroke patients with Atrial Fibrillation (AF) had a poorer clinical outcome than stroke patients without AF. Reduced exercise tolerance in AF may be caused by a low VO2max and inadequate cardiac endurance. **Objectives:** To evaluate functional outcomes in post-stroke patients with AF with and without revascularization intervention among patients who received post-stroke rehabilitation. **Methodology:** This is a retrospective study of HPUPM patients admitted between January and December 2021. Stroke patients with AF, whether they had revascularization or not, will undergo a post-stroke rehabilitation program until they are discharged. Following discharge, outcome measures such as the Modified Rankin Scale (MRS) and the Modified Barthel Index (MBI) were assessed using an independent t-test. **Result:** A total of 29 stroke patients with AF, of whom 15 received interventions. The majority of them are Female (51.7%), and Malay (62.1%), with a mean age of 72 ± 10.2 and a mean NIHSS of 16 ± 7.1 upon admission. Stroke patients with AF who received intervention had better outcome (mean MRS, 3 versus 4; $p > 0.05$, mean MBI, 39.0 versus 18.3; $p > 0.05$). MBI results show patients were severe and total dependency levels, respectively. **Conclusions:** Despite revascularization, AF had a poorer functional result in our study. Low cardiac endurance can impair exercise tolerance and the progression of activities in normal post-stroke rehabilitation regimens. As a result, a more organized post-stroke rehabilitation program with a cardiopulmonary endurance regimen will be beneficial in recovering acute post-stroke patients with AF.

CHALLENGES AND OUTCOMES IN INTRAVENOUS THROMBOLYSIS IN POSTERIOR CIRCULATION INFART (POCI) IN HOSPITAL SULTANAH NUR ZAHIRAH A RETROSPECTIVE STUDY

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ABSTRACT

Introduction: Posterior Circulation Infarct (POCI) corresponds to any infarctions within vertebrobasillar artery territories. It comprises of approximately 20% of ischemic stroke spectrum and remains as one the most challenging diagnosis in stroke due to atypical presentations. This reduces the sensitivity of prehospital stroke screening and delay in activation of stroke thrombolysis. This is shown through the local Stroke Thrombolysis Registry data collected in HSNZ. **Objectives:** This study aims to identify the challenges and outcomes in patients with acute POCI who received intravenous thrombolysis in HSNZ. **Methodology:** All acute stroke patients seen in Emergency Department Hospital Sultanah Nur Zahirah with POCI within 4.5 to 6 hours of onset with no evidence of ICH in CT brain from 2014- May 2022 were included. Demographic, clinical data, door to needle time, CT to needle time, NIHSS score pre and 24 hours post thrombolysis and CT Brain findings were reviewed. The outcomes are quantified using NIHSS at 24 hours post thrombolysis and Modified Rankin Score upon discharge and 3 months post discharge. The complications encountered during, and post thrombolysis were recorded, respectively. **Result:** Of all 25 patients with POCI who were given IV Alteplase, 28% had failed thrombolysis and intubated with poor NIHSS recovery and high MRS. 4 patients who failed thrombolysis passed away due to progression of stroke. 18 patients had successful thrombolysis with lower NIHSS score and good MRS (0-3). All patients presented more than 1 hour of symptom onset with average of 90 minutes from onset to door time, and the average door to CT time was 1 hour which exceeded the recommended 20 minutes. **Conclusions:** Difficulty in recognition of POCI by the public and healthcare professionals causes delay in delivery of stroke thrombolysis to eligible patients. The outcomes of POCI are variable due to the nature of the occlusion.

BETTER LATE THAN NEVER

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ABSTRACT

Background: Heterotopic ossification (HO) is pathological process of lamellar bone formation in muscles and surrounding joints that may lead to swelling, pain, nerve entrapment, contractures, and limited range of motion in the affected area. HO mostly occurs around the hip joint; however, it is a rare clinical entity in the upper extremity after stroke. Treatment of HO is challenging; therefore, early diagnosis and rehabilitation may improve patient's quality of life. This report presents a case of HO developed on the left elbow 3 months after a haemorrhagic stroke. **Case presentation:** A 59-year-old man, presented to our clinic with left hemiplegia due to basal ganglia haemorrhage after 3 months post stroke. The patient had not seen rehabilitation before. Motor recovery in the left upper limb was Brunnstrom stage 1 and left lower limb was Brunnstrom stage 3. Patient was not ambulating yet. The left elbow was warm, erythematous, and swollen and there was focal tenderness. Left elbow flexion was limited to 20 degrees. Left elbow radiograph done showed calcified HO around the elbow joint. Serum calcium, C-Reactive protein and erythrocyte sedimentation rate were within the normal range except ALP was borderline high, 150 U/L. Indomethacin and Alendronate was started for the treatment of HO. Rehabilitation of patient was passive stretching, cryo-cuff therapy, pressure garment together with the lower limb strengthening and gait retraining. He was undergoing therapy for 5 weeks. Upon discharge patient was able to ambulate with aid and independent in his self-care. **Conclusion:** This case highlights favourable outcome in functional recovery despite delayed rehabilitation, however early diagnosis and rehabilitation can prevent further complication and permanent disability. There is no specific reliable investigation to aid in diagnosing HO early, but detail clinical examination is important. In addition, non-pharmacological and pharmacological approach can give a good outcome in managing HO.

THE DEMOGRAPHICS, DISEASE PATTERN, INTERVENTION AND OUTCOMES OF STROKE PATIENTS PRESENTING TO EMERGENCY DEPARTMENT AT INSTITUT JANTUNG NEGARA IN 2019

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ABSTRACT

Introduction: Institut Jantung Negara (IJN) is located adjacent to Hospital Kuala Lumpur Hospital (HKL), which is a stroke center. We embarked on a study to look into the demographics, disease pattern and outcomes of stroke patients presenting to IJN Emergency Department (ED) in 2019. **Methodology:** This retrospective observational study was carried out between 1st January until 31st December 2019. All patients referred to HKL from IJN ED with the provisional diagnosis of stroke were included in the analysis. Data collected were analyzed using Excel software for age, gender, ethnicity, duration of symptoms at presentation, type of stroke, time to CT Brain, turn-around time before transfer and outcomes. **Result:** There were 25 patients diagnosed with stroke, where 72% were males, and majority were Malays (44%). The mean age was 70 years. Ischemic stroke was the most common type (48%) of stroke. 60% of cases presented more than 4.5 hours from symptom onset. 60% of patients had their CT brain performed more than the recommended 45 minutes. 96% of cases took more than 1 hour before referral to HKL. Of the 12 patients diagnosed with ischemic stroke, none of them received thrombolytic therapy, and majority (66%) had poor functional outcome. **Discussion:** Early recognition of stroke in the community is still lacking, as most patients delayed seeking medical assistance. The turn-around time for potential stroke patients in IJN is not optimal. Developing an efficient network with a stroke center can improve the management of stroke patients, thus leading to better patient outcomes.