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A REVIEW ON THE IMPACT OF ENDOGENOUS AND EXOGENOUS TESTOSTERONE ON ACUTE ISCHEMIC STROKE IN MEN

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ABSTRACT

Introduction: The role of testosterone in atherosclerosis have been the topic of interest in the past few decades. Several studies have suggested that both low and high level of endogenous testosterone are a potential risk factors to atherosclerosis and cerebrovascular events in men. **Objectives:** To provide a summary on all the studies related to the impact of endogenous and exogenous testosterone to the risk of ischemic stroke. **Methodology:** A comprehensive search of scientific publications on the association between testosterone level and therapy to the risk of ischemic stroke were performed in PubMed, Scopus, and Web of Science. Based on the predetermined inclusion and exclusion criteria, 12 articles on the impact of serum testosterone level to the risk of ischemic stroke and nine articles related to the effect of testosterone supplementation to ischemic stroke were selected. **Results:** In this review, there were 12 research articles on the association between the serum testosterone level and risk of ischemic stroke, which consist of seven longitudinal observational studies, three case-controls and two case cohort studies. Nine out of 12 (75%) studies reported a significant association between endogenous testosterone level and ischemic stroke. There were nine research articles on the impact of testosterone replacement therapy in elderly men with hypogonadism on the risk of ischemic stroke, which include five retrospective cohort studies and four case-control studies. Four (44%) studies found a positive result, two (22%) gain negative result, and three (33%) had a neutral finding. **Conclusions:** Both endogenous level and replacement therapy of testosterone may exhibit a dose-dependent and time-sensitive effects on the risk of ischemic stroke. These findings may have a significant clinical implication on the management and prevention of ischemic stroke. Therefore, more large-scale prospective studies are required to establish the link of temporal relationship and close the gap of current understanding.

CASE REPORT OF SUCCESSFUL THROMBOLYSIS IN YOUNG ADULT WITH ACUTE ISCHAEMIC STROKE SECONDARY TO HOMOCYSTEINEMIA

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ABSTRACT

Background: Young adults with acute hemispheric ischaemic stroke benefit from intravenous thrombolysis with good safety outcome. We are reporting a case of successful thrombolysis in young adult with right TACI secondary to homocysteinemia. **Case presentation:** A 16-year-old right hand-dominant gentleman presented with sudden onset of headache upon waking up associated with slurring of speech and body weakness. He denied any fitting, fever or altered consciousness. He was last seen well at 6am.Upon arrival to hospital, patient's GCS was 14/15(E3, V5, M6) with right gaze preference, left dense hemiplegia with left neglect. Initial NIHSS score was 15.A plain CT brain was done which showed right temporoparietal hypo density with ASPECT score of 7.CTA and CT perfusion brain was subsequently performed. CTA brain showed no large vessel occlusion with right middle cerebral artery infarct. CT perfusion showed mismatched deficit at right MCA region. A decision was made for reperfusion therapy using alteplase. NIHSS score improved to 10 at 1hour and subsequently 7 after 24 hours post thrombolysis. Further clinical examination revealed marfanoid features ie high arch palate, pectus carinatum, kyphoscoliosis, arachnodactyly and increased arm/height ratio. An extensive young stroke workout including lipid profile, renal and liver function test, thrombophilia screening, connective tissue screening, transthoracic echograph,24hours Holter monitoring was normal. However, the serum homocysteine level was elevated at 30micromol/L. In view of high index of suspicion of young stroke secondary to homocystinuria, a geneticist consultation was done. Further plasma amino acid and urine organic acid was sent which was normal. Patient was discharged well with aspirin, atorvastatin, and pyridoxine. Subsequent MRS score 3month post stroke was 1. **Conclusion:** In summary, young patient with atypical presentation of stroke can be challenging to clinicians especially during acute settings. Advanced imaging studies will definitely aid in decision for reperfusion therapy. However, bedside clinical acumen is crucial in the identifying aetiology of diseases especially in resource limited setting.

SPONTANEOUS CORONARY ARTERY DISSECTION AND POSTERIOR REVERSIBLE ENCEPHALOPATHY SYNDROME- A RARE STROKE MIMIC

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ABSTRACT

Background: The etiology of spontaneous coronary artery dissections(sCAD) in the majority of patients without risk factors is unclear. There is evidence that sCAD may be caused by a transient arteriopathy and possibly to arterial wall dysfunction that can be seen as well in posterior reversible encephalopathy syndrome (PRES). **Case presentation:** A 37-year-old woman with no medical illness presented to ED with cardiac arrest secondary to MI. Post resuscitations and coronary angiogram revealed spontaneous coronary artery dissection at distal right coronary artery (RCA), PCI to RCA done. In CCU, patient complain of bilateral eye blurring of vision subsequent appeared restless. The blood pressure 168/82mmHg. Head CT showed ill-defined hypodensities of bilateral occipitoparietal lobes in keeping with acute infarcts. Interval CT after 48hours shows slight improvement. Her symptoms resolved completely over a period of 48- 72 hours. Sedimentation rate and workup for connective tissue disorder was normal. A follow up MRI/MRA obtained 1 month after the event revealed complete resolution of bilateral occipital changes support PRES. **Discussion:** Microbleeds are found close to the tunica media/tunica adventitia junction, which implies that hemorrhage in sCAD is not the result of an intimal tear, but of hemorrhage in the wall itself from possibly the vasa vasorum. The pathophysiology of PRES is thought to be related to a leaky blood– brain barrier, which is the result of an alteration of vascular reactivity related to profound endothelial dysfunction. Endothelial health and function are dependent on signals from smooth muscle cells (SMC) in the arterial wall. **Conclusion:** Although the pathogenesis of sCAD and PRES is unclear, in this case it is logical to conclude that the development of a transient arteriopathy affecting the stability and function of the arterial wall predisposed this patient to sCAD and PRES.

DRIVING RISK AMONGST STROKE PATIENTS: A NOVEL DRIVING SCREENING TOOL

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ABSTRACT

Introduction: Retu to drive (RTD) is an important aspect of community reintegration, thus serving as an indicator of patient recovery and independence. A Screening for Fitness to Drive tool has been adopted by the Occupational Therapy (OCT) Unit of HSAJB to improve the delivery of services across Johor. **Objectives:** This article aims to describe the risk of driving in post stroke patients using this screening tool. **Methodology:** This retrospective study included stroke patients who were referred for driving assessment to the OCT HSAJB. Measures include demographics, medical history, physical, visual, and cognitive/perceptual abilities. Data analyzed using descriptive statistics for sample characteristics. **Results:** The sample included 15 subjects with a mean age of 49.5 years. 80% of the sample suffered an ischemic stroke and 20% had a hemorrhagic stroke. Using the Screening for Fitness to Drive tool, 33% had low driving risk while 67% had moderate driving risk. At the point of assessment, 67% of the sample had not RTD. However, 80% of the samples who had RTD were found to have moderate driving risk. Impairments hindering the ability to RTD were physical (40%) and cognitive/perceptual (60%) abilities. Approximately half reported anxiety about RTD with 71% from this group reporting very severe anxiety levels. **Conclusions:** Findings suggested stroke patients require a driving risk assessment before RTD. Identification of impairments limiting ability for RTD can lead to a targeted approach to treatment and improved outcomes. Other treatment centers can employ this tool to screen stroke patients.

THE TREND OF ONSET-TO-DOOR TIME AMONG ISCHEMIC STROKE PATIENTS IN SEBERANG JAYA HOSPITAL IN RELATIONSHIP TO THE NATIONAL NUMBER OF COVID-19 CASES

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ABSTRACT

Introduction: The onset-to-door time is important in determining the eligibility for reperfusion therapy among acute ischemic stroke (AIS) patients. The COVID-19 pandemic presents challenges to the public's health-seeking behaviours. This study was aimed to describe the relationship between the onset-to-door time (ODT) and the national number of COVID-19 cases. **Methodology:** The onset-to-door time is important in determining the eligibility for reperfusion therapy among acute ischemic stroke (AIS) patients. The COVID-19 pandemic presents challenges to the public's health-seeking behaviours. This study was aimed to describe the relationship between the onset-to-door time (ODT) and the national number of COVID-19 cases. **Result:** Among the 187 patients who presented to SJH and given hyperacute reperfusion therapy, 159 patients received thrombolytic therapy and 28 patients received mechanical thrombectomy. The ODT before the COVID-19 pandemic ranged from 74 minutes to 106.83 minutes. With the emergence of COVID-19 cases in Q1-2020, there was a rise in the ODT from 85.40 minutes(Q1-2020) to 129.68 minutes(Q3-2020). However, as the COVID-19 cases increased considerably from Q3-2020 to Q2-2021, the ODT dropped to 92.16 minutes(Q2-2021). In Q3-2021, when the number of COVID-19 cases surged and followed by a sharp decrease, the ODT increased steadily. There was an increase in the average ODT from the pre-COVID era (90.52 minutes) to COVID era (109.54 minutes). **Conclusions:** The ODT increased significantly in the COVID era compared to that of pre-COVID era. Hesitancy in health-seeking behaviour in AIS patients during the COVID-19 pandemic may have led to a delay in treatment and ineligibility for hyperacute stroke treatment.

THE TREND OF DOOR-TO-NEEDLE TIME AMONG ISCHEMIC STROKE PATIENTS IN SEBERANG JAYA HOSPITAL IN RELATIONSHIP TO THE NUMBER OF COVID-19 CASES

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ABSTRACT

Introduction: The COVID-19 pandemic presents challenges to the delivery of standard care for acute ischemic stroke. This study aims to describe the relationship between the door-to-needle time (DNT) and the number of COVID-19 cases in a primary stroke centre. **Methodology:** This is a retrospective cross-sectional study involving the AIS patients who presented to Seberang Jaya Hospital (SJH) and received intravenous thrombolysis therapy with recombinant tissue plasminogen activator (rt-PA) from January 2019 to March 2022. Data were extracted from the medical records and ongoing stroke registry. **Result:** A total of 154 patients presented to SJH and received thrombolysis therapy. Before the emergence of COVID-19 cases, the DNT fluctuated between 78.50 minutes and 92.20 minutes. When the COVID-19 cases increased gradually from 2020-Q1 to 2021-Q2, the DNT declined considerably before there was a steady rise. However, when there was a surge in the number of COVID-19 cases in Q3-2021, the DNT increased sharply to 120.11 minutes in the next quarter Q4-2021. In 2021-Q4, the COVID-19 cases dipped, and the DNT in 2022-Q1 improved to 64.70 minutes. The COVID-19 cases then peaked again in 2022-Q1. The average for door-to-imaging time was 33.00 minutes (pre-COVID era) and 29.07 minutes (COVID era) while the average for imaging-to-needle time was 50.96 minutes (pre-COVID era) and 55.26 minutes (COVID era). Overall, there was no significant difference in the DNT between these two periods, as shown by the DNT figures of 84.18 minutes (pre-COVID era) and 84.33 minutes (COVID era) respectively. **Conclusions:** When the number of COVID-19 cases rose rapidly, the DNT increased significantly. Fatigue among the health care providers, pre-admission COVID-19 screening, and increased workload during the COVID-19 pandemic are the possible causes of the delay in the care of AIS patients.

THE ASSOCIATION OF BODY MASS INDEX AND STROKE SEVERITY, STROKE TYPE AND STROKE SUBTYPE

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ABSTRACT

Introduction: Obesity is an established risk factor for stroke. However, many studies suggested that the outcome of stroke is better in obese patients ("Obesity paradox"). **Objectives:** To study the association between body mass index (BMI) and stroke severity, stroke type, and stroke subtype. **Methodology:** This is a retrospective cross-sectional study involving all hospitalised stroke patients in Seberang Jaya Hospital with self-reported information on BMI from July 2019 to December 2021. BMI was categorised into four groups: underweight (BMI<18.5), normal weight (BMI 18.5-24.9), overweight (BMI 25.0-29.9), and obese (BMI≥30.0). Stroke severity was classified based on the National Institute of Health Stroke Scale (NIHSS) into mild (0-4), moderate (5-15), moderate-severe (16-20), and severe (20-42). Stroke types were classified into ischemic, intracerebral haemorrhage (ICH), and transient ischemic attack (TIA). Ischemic strokes were further classified based on Oxfordshire Community Stroke Project (OCSP) into total anterior circulation infarct (TACI), partial anterior circulation infarct (PACI), lacunar circulation infarct, and posterior circulation infarct (POCI). Data were analysed using cross-tabulation analysis. **Result:** Out of 317 patients recruited, 171 patients (45.1%) were underweighted, 115 patients (30.3%) were normal, 65 patients (17.2%) were overweight, and 28 patients (7.4%) were obese. Most patients had mild strokes (72.8%), followed by moderate strokes (25.1%), moderate-severe strokes (1.6%), and severe strokes (0.5%). Ischemic stroke was the commonest stroke type (83.6%), followed by TIA (12.4%) and ICH (4.0%). Among patients with ischemic strokes, the majority have LACI (83.3%), followed by POCI (8.2%), PACI (6.0%), and TACI (2.5%). There were no significant associations between BMI and stroke severity (p-value=0.912), stroke type (p-value=0.654), and stroke subtype (p-value=0.558). **Conclusions:** BMI is not associated with stroke severity, stroke type, and subtypes. More studies are needed to address the corresponding risk factors that might affect the outcomes.

ASSOCIATION OF ADMISSION BLOOD PRESSURE WITH STROKE SEVERITY AND FUNCTIONAL OUTCOME IN ACUTE ISCHEMIC STROKE PATIENTS WHO RECEIVED INTRAVENOUS THROMBOLYSIS IN SEBERANG JAYA HOSPITAL

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ABSTRACT

Introduction: Hypertension is a known risk factor for ischemic stroke. It is crucial to understand whether admission blood pressure affects admission stroke severity and functional outcome. **Objectives:** To determine the association between the admission blood pressure (BP) with the admission stroke severity and functional outcome in acute ischemic stroke (AIS) patients treated with intravenous thrombolysis (IVT) in Seberang Jaya Hospital (SJH). **Methodology:** This retrospective cross-sectional study involved AIS patients who were given IVT from year 2012 to January 2022. Data was extracted from the medical records and analyzed with SPSS IBM Version 25. **Result:** A total of 141 stroke patients underwent thrombolysis from 2012 to January 2022. The admission BP was subdivided into high [SBP ≥211mmHg (n=15; 10.6%) or DBP ≥111mmHg (n=29; 20.6%)], medium [SBP 111-210mmHg (n=125; 88.7%) or DBP 71-110mmHg (n=99; 70.2%)], and low [SBP ≤110mmHg (n=1; 0.7%) or DBP ≤70mmHg (n=13; 9.2%)]. The mean admission SBP and DBP were 168.6mmHg (SD=33.6) and 94.1mmHg (SD=19.1) respectively. The admission NIHSS was categorized into mild [0-7 (n=24; 17.0%)], moderate [8-15 (n=77; 54.6%)], and severe [≥16 (n=40; 28.4%)]. MRS at three months was categorized as good prognosis, 0-2 (n=56; 39.7%), and poor prognosis, 3-6 (n=85; 60.3%). Admission SBP and DBP were not found to have significant association with admission NIHSS (p=0.598; p=0.818) and MRS at 3 months (p=0.126; p=0.208). **Conclusions:** Admission SBP and DBP are not associated with admission stroke severity and functional outcome in AIS patients treated with IVT.

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ASSOCIATION OF STROKE SEVERITY WITH HOSPITAL DISTANCE, ECONOMIC STATUS AND HOSPITAL ARRIVAL TIME AMONG STROKE PATIENTS IN HOSPITAL SEBERANG JAYA

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ABSTRACT

Introduction: Demographic variables and hospital arrival time are known to influence outcomes for stroke patients. However, the relation of these factors with stroke severity remains unclear. **Objectives:** This study aimed to determine the association of admission stroke severity with hospital distance, economic status, and hospital arrival time among stroke patients in Hospital Seberang Jaya. **Methodology:** This retrospective cross-sectional study involved both haemorrhagic and ischaemic stroke patients from July 2020 to December 2021. The severity of stroke patients during admission was based on the National Institutes of Health Stroke Scale (NIHSS). Hospital distance was categorized by quartiles. Economic status was based on the salary of the patients. Salary was categorized into B40 and M40, with income range of <RM4850, and RM4850-RM10959, respectively. Hospital arrival time was categorized into the early arrival group and the late arrival group, indicated by the onset-to-door time of ≤4.5h, and >4.5h, respectively. **Result:** There were 278 stroke patients. A majority of them had a hospital distance of 12.0km to 19.0km (n=71, 25.5%), among which, 81.7% of the patients had mild stroke. There were 272 patients in the B40 category and only 6 of them were in the M40 category. Most of the B40 patients had mild stroke (n=200, 73.5%) while all M40 patients had mild stroke. There were more stroke patients in the early arrival group compared to the late arrival group (64.7% versus 35.3%). Most of the patients from both groups had mild stroke, which was 73.9% and 74.5%, respectively. All variables, namely hospital distance, salary and onset-to-door time were not significantly associated with admission NIHSS (p=0.154, p=0.423, p=0.921). **Conclusions:** Hospital distance, economic status, and hospital arrival time may not be associated with admission stroke severity, but these factors warrant larger studies to confirm the findings.