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CORTICOSPINAL TRACT (CST) STRUCTURAL INTEGRITY AS THE IMAGING MARKER OF FUNCTIONAL MOTOR RECOVERY OUTCOME IN STROKE REHABILITATION

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ABSTRACT

Background: Diffusion tensor imaging (DTI) studies offer an objective assessment of the structural integrity involving the ipsilesional and contralesional corticospinal tract (CST). Such an assessment is recognised to help to inform the rehabilitation progress in stroke recovery. Fugl-Meyer Assessment- Upper Extremities (FMA-UE) is the most common functional motor outcome used to assess the progress of motor recovery of the upper limbs in post-stroke events.

Objective: We investigated both ipsilesional and contralesional CSTs structural integrity (FA-CST) and compared their correlation with functional motor outcome (FMA-UE) in a group of post-stroke rehabilitation patients.

Methods: A group of 18 stroke survivors (who met the inclusion and exclusion criteria) were consented and recruited to undergo the FMA-UE and Magnetic Resonance Imaging (MRI)-DTI.

Results: There was a statistically significant and strong positive correlation of ipsilesional FA-CST value with FMA-UE score ($r=0.786$, $p<0.001$). For FA value in the contralesional CST, a significant and moderate positive correlation was found with FMA-UE score ($r=0.518$, $p=0.036$).

Conclusion: These findings suggest 2 different site of FA measurements, ipsilesional and contralesional CSTs can inform reliably the structural integrity of CST and these imaging markers can potentially be used clinically to correlate with the functional motor activity outcomes in stroke rehabilitation.

A SYSTEMATIC REVIEW AND META-ANALYSIS: THE EFFECTS OF VEGETARIAN DIETS ON SYSTOLIC AND DIASTOLIC BLOOD PRESSURE

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ABSTRACT

Introduction: The effects of vegetarian diets on systolic and diastolic blood pressure (BP) have been reported in previous systematic reviews; nevertheless, the relative effectiveness is not well known.

Method: We performed a systematic review and meta-analysis to determine the effect of a vegetarian diet on the reduction of systolic and diastolic BP. We only included randomized controlled trials (RCT) and searched through Medline, PubMed and Cochrane Central Register. We analysed 15 eligible RCTs with a total of 856 subjects.

Results: Vegan diet showed more reduction in systolic BP (WMD, -3.12 mm Hg; 95% CI = -4.54, -1.70, $p < 0.001$) as compared with a lacto-ovo-vegetarian diet (WMD, -1.75 mm Hg, 95% CI -5.38, 1.88, $p = 0.05$). The vegan diet has also demonstrated greater reduction of diastolic BP (WMD, -1.92 mm Hg; 95% CI = -3.18, -0.66, $p < 0.001$) as compared with a lacto-ovo-vegetarian diet which showed no changes in diastolic BP reduction (WMD, 0.00 mm Hg, 95% CI = 0.00, 0.00, $p = 0.432$). A pooled result of all types of vegetarian diets showed a significantly lowering effect on the systolic BP (WMD, -2.66 mmHg; 95% CI = -3.76, -1.55, $p < 0.001$) and diastolic BP (WMD, -1.69 mm Hg; 95% CI = -2.97, -0.41, $p < 0.001$) as compared to an omnivorous diet.

Conclusion: Vegan diets are associated with significant reductions in BP compared with lacto-ovo-vegetarian diet and omnivorous diets. These suggest that vegan diet is more superior than other diets as mentioned in the study to aid in the primary prevention and overall management of hypertension.

ASSOCIATION OF STROKE SEVERITY AND RISK FACTORS WITH THE LOCAL ETHNIC COMMUNITY OF SEBERANG PRAI - 4 MONTHS REVIEW FROM ACUTE STROKE UNIT, SEBERANG JAYA HOSPITAL

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ABSTRACT

Introduction: The population of Seberang Perai District in Penang is estimated to be 1.1 million in 2020, and consists of the following ethnic groups: Malays (50.3%), Chinese (38.9%), Indians (10.4%), and others (0.4%) .

Objective: To study the stroke type and risk factors among patients of different ethnicities, who were admitted to Seberang Jaya Hospital due to stroke.

Method: This is a retrospective cross-sectional study of all patients who were admitted to the acute stroke unit of Seberang Jaya Hospital from 11th November 2019 to 29th February 2020.

Results: Of 92 patients who were hospitalized for stroke during the 4-month period, 48.9% were Malays, followed by Chinese (37.0%), and Indians (14.1%).

Associated risk factors among Malay patients were hypertension (73.3%), diabetes mellitus (53.3%), history of stroke (15.5%) and cigarette smoking (11.1%). None had atrial fibrillation. Lacunar circulation infarcts (LACI)[62.2%] was the commonest, followed by partial anterior circulation infarcts (PACI)[20.0%], total anterior circulation infarcts (TACI)[2.3%], and posterior circulation infarcts (POCI)[4.4%]. Transient ischemic attacks (TIA) accounted for 11.1% in this group. Similar risk factors were observed among the Chinese. Hypertension (76.4%) topped the list, followed by diabetes mellitus (44.1%), history of stroke (14.7%) and cigarette smoking (11.7%). None had atrial fibrillation. The majority had LACI (64.7%), 2.9% had PACI, 5.9% had TACI, 5.9% had POCI, 17.6% had TIA and 3.0% had intracranial bleed. Indians too shared similar risk factors: Hypertension (76.9%), diabetes mellitus (46.1%), history of stroke (15.3%) and cigarette smoking (7.6%). None had atrial fibrillation as well. The majority (69.2%) had LACI, 7.6% had TACI, and 23.2% had TIA.

Conclusion: Among stroke patients who were admitted to the acute stroke unit of Seberang Jaya Hospital, LACI was the commonest stroke type. The most prevalent risk factors were hypertension and diabetes mellitus.

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ANGIOEDEMA SECONDARY TO IV ALTEPLASE FOR ACUTE ISCHEMIC STROKE

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ABSTRACT

Introduction: Orolingual angioedema is a rare complication of alteplase which is frequently used for stroke thrombolysis. Its incidence is estimated at 0.2-5.1%. This was our first encounter of orolingual angioedema out of 113 thrombolysed patients since January 2014 till May 2020.

Methods: We report a case of orolingual angioedema in a patient who was thrombolysed with IV alteplase.

Results: A 62 years old man with underlying hypertension, DM, recurrent TIA episodes 10 years ago, NSTEMI 2 years ago, presented with acute left upper & lower limb weakness and left hemifacial numbness. He has left facial palsy, right gaze preference, complete left hemianopia and neglect, aphasia, dysarthria, upper and lower limb power 1/5. NIHSS score was 20. CT brain revealed slight loss of grey white matter differentiation at right middle cerebral artery territory. ASPECT score is 8/10. He was on oral perindopril 4mg daily for hypertension. He developed swelling at base of tongue, lower lips swelling and stridor 5 minutes after completion IVI alteplase. IV methylprednisolone 125mg, IV adrenaline 0.1mg, IV pantoprazole 40mg and IV chlorpheniramine 10mg was immediately administered. His condition was alerted to our anesthesiology & ENT teams. Fortunately, his oxygen saturation was maintained with 15L oxygen. He did not develop worsening respiratory distress. The angioedema resolved spontaneously after 48 hours. His remaining stay was uneventful & was discharged after 15 days stay in hospital.

Conclusion: Orolingual angioedema is a rare life threatening emergency requiring immediate attention and prompt treatment. Physicians need to be alert about ACEi that are common in medication prescriptions.

YOUNG STROKE WITH ANTIPHOSPHOLIPID SYNDROME AND NEPHROTIC SYNDROME

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ABSTRACT

Introduction: Acute ischemic stroke in young adults is uncommon as compared to the elderly. It accounts approximately 10% of all stroke cases. Physical limitations caused by stroke in young adults lead to huge economic loss to patients and their families. However, these groups of patients have longer life expectancy at post-stroke, which in turn pose a heavy burden to the healthcare system. Studies have illustrated that they have better long term prognosis with better functional recovery, with some returning to work.

Method: This is a case report of a young man with ischemic stroke and the workup for young ischemic stroke.

Case Report: We report a case of a 21-year-old man with underlying nephrotic syndrome secondary to minimal change disease who developed an ischemic stroke causing left hemiparesis. He received intravenous thrombolysis followed by a mechanical thrombectomy. Magnetic Resonance Angiography of the brain showed stenosis at distal M1 segment of right middle cerebral artery. At post mechanical thrombectomy, he developed acute kidney injury and required haemodialysis. Further workup revealed that he had concomitant antiphospholipid syndrome(APS) and nephrotic syndrome, and he was started on Vitamin K antagonist anticoagulant.

Conclusion:

- Young patients with thrombotic events require extensive workup to look for underlying causes of thromboembolism.
- Patients with antiphospholipid syndrome may have APS nephropathy manifestation, and this could lead to end stage renal failure. However, the association of APS nephropathy and minimal change disease remains unclear.
- The use of direct oral anticoagulants in nephrotic syndrome or APS are not proven well. Current recommendation still favors the use of Vitamin K antagonists in these groups.

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MULTIDISCIPLINARY MANAGEMENT OF A HEMORRHAGIC STROKE DURING PREGNANCY WITH A SUCCESSFUL FUNCTIONAL OUTCOME

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ABSTRACT

Introduction: Stroke is debilitating and affects 30 out of 100,000 pregnancies. This is a case report describing the multidisciplinary medical management as well as rehabilitation and its importance in a middle-aged female who sustained a hemorrhagic stroke during her second trimester of pregnancy.

Methods: A 32-year-old female at 16 weeks gestation with nil past medical history presented to an acute hospital with sudden left-sided weakness and slurred speech secondary to a right fronto-parietal hematoma and a right parietal arteriovenous malformation (AVM). She underwent urgent right decompression craniectomy and evacuation of the frontoparietal clot. One month later, she underwent excision of right opercular region AVM with no residual AVM identified on post-surgical radiological imaging.

Results: She received inpatient rehabilitation shortly after her decompressive craniectomy and continued to do so after her AVM excision. Her activities of daily living (ADLs) and ambulatory ability improved after 9 weeks of inpatient rehabilitation.

With multidisciplinary management by the obstetrician, neurosurgeon, and anesthetist, she underwent a caesarean section at 37 weeks gestation with general anesthesia uneventfully and successfully delivered a healthy baby boy. At 9 months post-stroke, she underwent cranioplasty uneventfully. She continued with her outpatient rehabilitation. At 10 months post-stroke, she was reviewed in the Rehabilitation Medicine clinic and she was independent with her ADLs but required assistance to physically care for her baby. Over the two years post-stroke, she received 2 courses of botulinum toxin injection to her spastic left-sided upper limb and outpatient rehabilitation. Two years after her stroke, she could physically care for her child fully and could perform household chores.

Conclusion: Stroke during pregnancy is usually associated with high mortality and morbidity. Multidisciplinary medical management in addition to rehabilitation are essential for the favorable prognosis of both mother and child.

THE LIGHT AT THE END OF TUNNEL FOR MANAGEMENT OF ACUTE ISCHEMIC STROKE WITH LARGE VESSEL OCCLUSION IN NON-NEUROLOGIST HOSPITAL

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ABSTRACT

Introduction: The advances in stroke reperfusion therapies in large vessel occlusions (LVO) of acute ischemic stroke (AIS) have known to improve the functional outcome of patient despite being treated in non-neurologist hospital.

Case report: A 38 years old male with hypertension and hyperlipidemia, presented to non-neurologist hospital with sudden onset of right sided hemiparesis and neglect together with global aphasia. His initial National Institutes of Health Stroke Scale (NIHSS) was 22. Non-contrasted Computed tomography (CT) brain showed left corona radiata infarction. After discussion with neurologist from the hub of stroke team, he was given intravenous Alteplase at 2 hours and 15 minutes from the onset of symptoms. 2 hours post thrombolytic therapy, his NIHSS remained at 22 and a CT angiography of brain showed significant stenosis of more than 75% at the left middle cerebral artery (MCA) M1 segment. He was then referred to private hospital for mechanical thrombectomy with financial support from his employer, Malaysian Armed Forces. However, thrombectomy was not performed as CT angiography of brain repeated at 8 hours post Alteplase showed recanalised MCA. NIHSS at 2 weeks post intravenous thrombolysis and in-patient intensive rehabilitation was 16 with improvement in right hemiparesis and residual expressive dysphasia. His modified Rankin Scale (mRS) was 4 on discharge. An outpatient review 3 months post thrombolysis showed significant reduction of NIHSS to 5 and mRS improved to 2. He is now able to walk independently and speak comprehensibly.

Discussion and Conclusion: The development of hub-and-spoke model of stroke team between neurologist and acute internal medicine service in non-neurologist hospital as well as collaboration with private hospital for mechanical thrombectomy has become the stepping stone for patients to receive early reperfusion therapies. Early revascularisation of AIS due to LVO and coordinated intensive rehabilitation service would result in good functional outcome for patients.