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INCIDENCE RATE OF DEVELOPING FIRST EVER STROKE OVER A 5-YEAR PERIOD

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ABSTRACT

Introduction: Stroke is a life changing event causing a wide range of impairments, death and increased healthcare costs. The incidence rate of first ever stroke in older Malaysians is not well studied. This information is vital to enable service planning for acute treatment, rehabilitation, community facilities and stroke prevention strategies. This study aims to determine the incidence of first ever stroke in older urban Malaysians.

Method: The participants were from the Malaysian Elders Longitudinal Research Study. Individuals aged ≥55 residing in the urban area of Klang Valley were recruited. Of 1670 baseline participants, 888 with no history of stroke were followed up for 5-years through phone calls and included in this analysis. Participants were asked if they had a stroke in the past 5 years, with the date of diagnosis recorded. Incidence rates per 100,000 persons per year was calculated.

Result: Thirteen of 888 (1.5%) participants with mean (SD) age of 68.33 (7.20) years (76.9% male) had a first ever stroke in the 5 years period at follow up telephone call. The incidence rates per 100,000 per year for a first ever stroke in a 5-year period was 294. Individuals aged between 60 to 64 had the highest incidence rate of 396/100,000 persons per year. Those within the 70-74 age group had the lowest incidence rate. Men showed a higher incidence rate with almost 5 times the incidence rate of women.

Conclusion: This study shows the incidence rate of first ever stroke in urban older Malaysians. We were able to determine the characteristics of those with the highest incidence rates. This can help with targeted public health strategies of stroke prevention and planning of stroke services.

POST-STROKE APHASIA REHABILITATION IN MALAYSIA: FINDINGS FROM A SURVEY WITH SPEECH-LANGUAGE PATHOLOGISTS

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ABSTRACT

Introduction: Stroke is the third leading cause of death and disability in Malaysia, contributing to a growing population in need of post-stroke aphasia rehabilitation. To date, the SLP services for this population has been largely unexplored. This study aimed to obtain SLPs' perspectives regarding SLP services for people with post-stroke aphasia in Malaysia with respect to: 1) current management practices; 2) barriers and facilitators to service provision; and 3) clinical and research priorities.

Methods: Convenience and snowball sampling were used to recruit participants via professional networks. Ninety-two SLPs who were currently providing services to people with post-stroke aphasia contributed to the survey. Questions were based on previous survey research that explored aphasia management in other countries. Quantitative data were analysed using descriptive statistics and qualitative data using conventional qualitative content analysis.

Results: The majority of SLPs were employed in a government-funded institution (61%) and provided aphasia services within an outpatient rehabilitation setting (60%). All SLPs reported speaking two or more languages and provided bilingual or multilingual SLP sessions. Common practices reported by the SLPs included commencing management more than one week after receiving the initial referral (48%), using non-standardised tools for screening (90%) and assessment (90%), as well as providing monthly to quarterly intervention sessions (50%). Across the continuum of care, SLPs identified the main barriers and facilitators to optimal aphasia rehabilitation related to SLP's capacity, consumers' awareness and commitment, and the availability of locally relevant resources. SLPs identified clinical and research priorities included the need for local evidence and resources.

Conclusion: SLPs in Malaysia reported similar practices to SLPs working in other countries, particularly countries with emerging aphasia rehabilitation services. There is a need to improve the provision of post-stroke aphasia rehabilitation and encourage further research. The findings are relevant for informing SLP practice in countries with emerging aphasia rehabilitation services and multilingual populations.

NEUROPROTECTIVE EFFECT OF NANOPARTICLE-BOUNDED BRAIN-DERIVED NEUROTROPHIC FACTOR (BDNF) ON EXPERIMENTAL HAEMORRHAGIC STROKE IN RATS

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ABSTRACT

Introduction: Brain-derived neurotrophic factor (BDNF) plays an important role in brain plasticity and repair while nanoparticle (NPs) poly (lactic-co-glycolic acid) (PLGA) has been proven either in-vivo or in-vitro as potential carriers for drugs across the BBB, with advantages of enhanced drug efficiency and safety. This study was aimed to investigate the neuroprotective effect of BDNF-PLGA nanoparticles on experimental haemorrhagic stroke (HS) in rats

Methodology: Sprague-Dawley rats were divided into 6 groups; group 1, sham operation while group 2 to 6 were induced with HS. 15 minutes after induced, all groups were treated with respective formulations intravenously: groups 1 and 2 were treated with saline; group 3 was treated with empty PLGA NPs; group 4 with PLGA NPs coated with surfactant; group 5 with BDNF-loaded PLGA NPs and group 6 with BDNF-loaded PLGA NPs coated with surfactant. Behavioural assessments were performed after treatment on days 1, 3 and 7. On day 7, rats were sacrificed and brain was taken for histological and immunohistochemical analysis.

Results: Caspase-3 staining showed that treatment with BDNF-loaded PLGA NPs exhibited significant lower in apoptosis compared with other HS groups. Groups 2, 3 and 4 demonstrated a significant increase in glial cells when compared to BDNF treated groups. Rats treated with BDNF-loaded PLGA NPs also exhibited low expression of synaptophysin. Open field test showed that treatment with BDNF-loaded PLGA NPs produced high score in rearing and total distance travelled indicating improvement in locomotor activity. BDNF NPs treated group showed improved rotarod performance indicating improvement in their motor learning and coordination. Rats treated with BDNF-loaded PLGA NPs also exhibited increased grip strength as evidence of motor neuroprotection.

Conclusion: BDNF-loaded PLGA NPs has neuroprotective effect on experimental haemorrhagic stroke in rats.

ADENOSINE A1 RECEPTOR PLAYS ROLE IN NEUROPROTECTION BY RESVERATROL AGAINST NEUROBEHAVIOURAL DEFICITS IN RAT MODEL OF HEMORRHAGIC STROKE

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ABSTRACT

Introduction: Stroke, a common cause of brain injury, contributes to significant morbidity and mortality worldwide. Intracerebral hemorrhage (ICH) remains the least treatable stroke subtype without a definitive therapy. Current evidences suggest an important role of adenosine receptors in the modulation of sensorimotor pathways which might offer a new target for neuroprotective strategy. This study was aimed to investigate involvement of adenosine A1 receptor (A1R) in the mechanism of neuroprotection by resveratrol in animal model of ICH.

Methods: Sixty male Sprague Dawley rats were divided into five groups: (i) control, (ii) sham, (iii) vehicle (0.1% DMSO saline), (iv) trans-resveratrol (4 nmol) and (v) trans-resveratrol (4 nmol) with A1R antagonist, DPCPX (8 nmol). Pre-treatments (groups iii-v) were given through intracerebroventricular injection. Thirty minutes after pre-treatment, ICH was induced using collagenase through intrastriatal injection. Forty-eight hours after ICH, the rats were assessed using a variety of neurobehavioural tests such as neurological severity score, tail flick, open field, grip strength and rotarod tests. After that, rats were euthanized, and the brains were subjected to gross morphometry and histological observations. Coronal sections of brain tissue were stained with haematoxylin & eosin, and immunohistochemistry was done using antibody to neuronal nuclear-specific protein and oligodendrocyte-specific protein.

Results: Severe neurobehavioural deficits and hematoma with diffuse oedema were observed in ICH rats. Pre-treatment with resveratrol partially preserved neurobehavioural functions that was accompanied by reduction of hematoma volume by 73.22% ($p<0.05$), damaged area by 60.77% ($p<0.05$), and striatal neuron depletion by 36.30% ($p<0.05$). Resveratrol pre-treatment increased survival rate among ICH rats by 27.70% ($p<0.05$). The resveratrol-induced restoration in survival rate, neurobehavioural outcomes, damaged area and neuronal density were abolished by administration of DPCPX.

Conclusion: This study demonstrates involvement of adenosine A1 receptor in the underlying mechanism of neuroprotection in ICH rats by resveratrol.