electrophysiological and neurochemical observations. The neurochemical basis is further probed by a combination of in vitro and in vivo approaches, including the use of microdialysis, chronic intracranial incision, and electrophysiological recordings. The results have implications for the development of new therapeutic strategies for the treatment of neurological disorders.

**Abstract**

The role of glutamate in neurodegenerative diseases, particularly Alzheimer's disease (AD), has been extensively studied. Elevated levels of glutamate are associated with neuronal damage and cell death in AD, leading to the development of therapeutic strategies aimed at attenuating glutamatergic transmission. In this study, we investigated the effects of chronic administration of a novel glutamate receptor antagonist on hippocampal function in a rat model of AD. Our results showed a significant improvement in cognitive performance, suggesting a potential therapeutic role for this compound in the treatment of AD.

**Keywords:** Alzheimer's disease, glutamate, hippocampus, cognitive function, glutamate receptor antagonist.

Erectile dysfunction (ED) is a common complication of diabetes. Oxidative stress plays an important role in diabetic ED, however, the exact mechanism is unknown. Nitric oxide (NO), generated by neuronal NO synthase (nNOS) within nerves arising from the major pelvic ganglion (MPG), initiates penile erection. nNOS function is tightly regulated by several cofactors, andimerization is required for NO production. nNOS monomers produce reactive oxygen species and may contribute to oxidative stress. HL-001 is an antioxidant identified as a potent neuroprotective compound through a novel drug screening strategy. We investigated whether diabetes affects MPG nNOS dimerization in association with ED and tested if HL-001 promotes dimer formation. Adult male rats (n = 21) were administered a single injection of streptozotocin (STZ, 75 mg/kg, ip) or saline and divided into 3 groups: STZ (diabetes), Control (saline injection), STZ + HL-001 (750 microgram/kg/day). Starting at week 4, rats were administered HL-001 or vehicle daily and at week 8, erectile function was evaluated by electrical stimulation-induced changes in intracavernous pressure. nNOS dimer/monomer ratios in MPG homogenates were determined by low-temperature polyacrylamide gel electrophoresis. Diabetic rats exhibited decreased erectile function (p < 0.05) and 60% decreased nNOS dimer/monomer ratio in the MPG. HL-001 treatment improved erectile function and increased nNOS dimerization in MPG to levels similar to control rats. Our results suggest a novel basis for ED in diabetes that involves neuronal oxidative damage resulting from reduced nNOS dimerization and potential treatment using HL-001.


Shahrizaila N1, Jin GK1, Annuar AA2, Chaudhry R3, Ly C3, Nicholson GA4, Kennerson M3, 1Neurology Unit, Department of Medicine, 2Department of Molecular Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia; 3Northcott Neuroscience Laboratory, ANZAC Research Institute and Sydney Medical School, University of Sydney, Sydney, Australia.
Australia; 4Molecular Medicine Laboratory, Concord Hospital, Sydney, Australia.

X-linked Charcot-Marie-Tooth (CMTX) neuropathy is the second most common form of CMT accounting for 10% to 20% of patients. X-linked dominant CMT (CMTX1) is responsible for 90% of CMTX cases and is caused by mutations in the connexin 32 (Cx32) or gap junction protein beta-1 (GJB1) gene, which maps to Xq13. In rare instances, mutations have been reported in the GJB1 promoter and untranslated region. Haemophilia A (HA), also an X-linked condition, is a common disorder of coagulation with an incidence of 1 in 10,000 males. The diagnosis is made by establishing a low level of Factor VIII and the F8 gene maps to Xq28. Patients inheriting these separate conditions have rarely been reported. In this report, we describe a three generation Malaysian Chinese family where some members have inherited the two different X-linked disorders, CMTX1 and HA, whilst others have either CMTX1 alone or HA alone. The CMTX1 is due to -459C>T point mutation in the non-coding region of the GJB1 gene. This mutation has been previously described in an American family, Italian family and more recently a Chinese family from Hong Kong. The current family will make this the fourth report of such mutation in CMTX1, also occurring in patients of Chinese descent who were born and raised in Malaysia. Unique to this family is the presence of a second X-linked disorder, HA in some family members. In view of the distance between the two loci, crossing-over events are likely to occur at a high frequency, which would explain the presence of both inherited disorders in some patients and only one in others.

SERIAL NERVE CONDUCTION STUDIES IN GUILLAIN-BARRÉ AND FISHER SYNDROMES

Shahrizaila N1, Jin GK1, Yuki N2. 1Neurology Unit, Department of Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia; 2Departments of Medicine and Microbiology, National University of Singapore, Singapore.

Guillain-Barré syndrome (GBS) can be divided into two major subtypes: acute inflammatory demyelinating polyneuropathy (AIDP) and acute motor axonal neuropathy (AMAN). Fisher syndrome (FS) is considered a variant of GBS, but it is debatable if FS is demyelinating or axonal. Over a period of 10 months, eight patients presented with GBS (n = 4), FS (n = 2), or FS/GBS overlap (n = 2). All had baseline nerve conduction studies (NCS) and in six patients serial NCS were also performed. Based on the clinical features and NCS data, the four GBS patients were classified as AIDP (n = 3) and AMAN (n = 1). The serial NCS of all three AIDP cases showed increase in distal motor latencies and motor action potentials (CMAP) in subacute phase of the illness. One to have AIDP at first NCS but showed reversible conduction block and rapid clinical improvement, all occurring within a week. These features are in keeping with the motor conduction block neuropathy of AMAN. NCS of both FS patients showed sensory nerve action potential (SNAP) baseline and in one patient the SNAPs showed complete recovery at repeat FS patients showed recovery within their presentation without any immunosuppressive therapy. Serial NCS in one patient showed CMAP amplitudes and absent SNAPs in a motor and sensory axonal pattern. The patient was treated with a course of intravenous immunoglobulins and recovery within a week. Repeated NCS showed improvement in CMAP and SNAPs were still absent. The SNAPs by the third week of her illness. Serial NCS in this case support the overlap of the features of GBS with FS, also suggesting than rather than a demyelinating disorder. DTI further support that serial NCS can help understanding the pathophysiology of GBS and FS.

DTI TO ASSESS DEGENERATION AND REGENERATION IN TRAUMATIC NEUROPATHY

Sheikh KA, Zhou Y, Sen M, Paker AL. The University of Texas Health Science Center, TX, USA.

Serious injuries to the periphery result from civilian and combat trauma with traumatic nerve injuries are left with disability and morbidity. There is an increasing need for measures to monitor nerve regeneration to make informed management decisions. Currently, non-invasive imaging techniques are used to assess the extent of nerve regeneration in traumatic neuropathy are not available in clinical practice. We combined magnetic resonance (MR) imaging and diffusion tensor imaging (DTI) technology, to monitor the extent and regenerate response in patients with nerve injuries. We hypothesize that these parameters can detect nerve fiber degeneration and regeneration. To test this hypothesis, we performed DTI on seven normal controls and four patients with different degrees of nerve injury.