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## Neuroprotective effect of potassium channel openers on cerebral ischemia-reperfusion injury in type I diabetic rats

Anand B Pithadia<sup>1</sup>, Shital J Panchal<sup>2</sup>, B N Suhagia<sup>1</sup>, Arun Soni<sup>1</sup> and Tejal Soni<sup>1</sup> <sup>1</sup>Dharmsinh Desai University, India <sup>2</sup>Nirma University, India

Gerebral ischemic stroke is an obstruction blood supplied to brain. It is of either ischemic stroke (IS) or hemorrhagic stroke. Diabetes mellitus increase risk for macro-vascular and micro-vascular complications. This study was done to estimate the potential neuroprotective role of potassium channel openers in cerebral ischemia-reperfusion (IR) injury in streptozotocin (STZ) induced type-I diabetic rats (T1DR). Potassium channel openers-cromakalim, cinnarizine and nicorandil; potassium channel blocker- glibenclamide, insulin (as an anti-diabetic standard), telmisartan (as an anti-hypertensive standard agent) and vitamin E (as an antioxidant and anti-apoptotic standard agent) were given for three days in streptozotocin (45 mg/kg) induced type I diabetic rats along with transient middle cerebral artery occlusion. After 24 hours of surgery, serum glucose, neurobehavioral score, cerebral infarct volume, post ischemic body weight changes, superoxide dismutase activity, nitrite levels and malondialdehyde (MDA) levels were measured to evaluate mechanism of potassium channel openers (KCOs) for neuroprotection. Following STZ administration and ischemia-reperfusion, blood sugar, neurobehavioral score, cerebral infarct volume, MDA and nitrite levels were significantly high and SOD activity was significantly less in diabetic–IR groups. Treatment with all three potassium channel openers showed neuroprotective activity in diabetic IR groups. These activities were more with cromakalim and nicorandil compared to cinnarizine. Except insulin and glibenclamide, none of the agent significantly reduces plasma glucose levels. Treatment of ischemic stroke with potassium channel openers in T1DR is neuroprotective. Inhibition of oxidative stress may contribute to their neuroprotective effects after stroke in T1DR.

abpithadia@hotmail.com

## Will electronic integrated text, visual and audio questionnaire be a better tool to evaluate the health status of paediatric hydrocephalus patients?

**Joy Tan** Imperial College London

**Background:** The Electronic Integrated Text, Visual and Audio Questionnaire (EITVAQ) were designed towards developing a disease-specific tool to measure child health status from a child's perspective. EITVAQ's outcome is anticipated to be positive, introducing a child-friendly health measurement tool.

**Methods:** This was a prospective crossover pilot study that compared EITVAQ to a printed text 2-paged paper questionnaire (TEXT) format quality of life questionnaire in pediatric hydrocephalus patients. The study was conducted from Nov 2015 to June 2016 in the Neurosurgical Outpatient department, Children University Hospital. Data was compiled for both EITVAQ and TEXT and analyzed using Software Package using Statistical Analysis (SPSS).

**Findings:** There was 100% rate of completion for EITVAQ. However, only 9 (37.5%) of the patients managed to complete the text format. The mean time to complete EITVAQ was 7 minutes. There were 32 questions found in EITVAQ. The mean score for EITVAQ was 132.92 (83%) satisfactory score. Using Pearson Chi-Square Test, the P-Value was 0.341. Although this was not a significantly substantial value, however, patient with less surgical procedure were able to complete EITVAQ 18.9% more than patient with more than five surgical procedures. Furthermore, there was no real correlation between the gross motor function classification system (GMFCS) score and the inability to complete the TEXT format.

**Conclusions:** In this study, the results supports that EITVAQ is a better tool to evaluate the health status of pediatric hydrocephalus patients as it is tailored according to their disability needs

joytanewenn@yahoo.com