The Journal of Headache and Pain
a SpringerOpen Journal

POSTER PRESENTATION Open Access

Role of TRPV-1 in CGRP-mediated trigeminal sensitization

D Chatchaisak[1], B Chetsawang[2], SM le Grand[3], P Govitrapong[2], A Srikiatkhachorn[4*]

From The European Headache and Migraine Trust International Congress
London, UK. 20-23 September 2012

Introduction

Calcitonin gene-related peptide (CGRP) plays an important role in migraine pathogenesis. Transient receptor potential vanilloid-1 (TRPV1) is a cation channel which is expressed in sensory ganglia and can be activated by a number of pain inducing stimuli. The relationship between CGRP and TRPV-1 is still unclear.

Objective

to investigate the functional role of CGRP on pain sensitization via the mediation of TRPV1 expression in rat trigeminal ganglion (TG).

Materials and methods

CGRP (600 ng/kg) was intravenously injected to the Wistar rats (250-300 g). Rat trigeminal ganglia and brainstem were removed 45 and 60 minutes after CGRP or saline injection. The levels of CGRP, TRPV-1, phosphorylated PKC (p-PKC) and cyclic AMP responsive element-binding protein (CREB) in TG were determined by western blotting and by immunochemical and immunofluorescence staining. The c-fos level in trigeminal nucleus caudalis (TNC) was also determined.

Results

Following CGRP injection, there was a significant increase in the amount of TRPV1, CGRP, p-PKC and CREB were observed in rat TG. In addition, an increase in c-fos levels was also determined in TNC of CGRP-treated rats indicating trigeminal nociception.

Conclusion

These results indicate the role of TRPV-1 in CGRP-evoked trigeminal sensitization. This may explain the process of peripheral sensitization developed during the attack of migraine.

[4]Deaprtment of Physiology, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand
Full list of author information is available at the end of the article

Author details
[1]Research Center for Neuroscience, Institute of Molecular Biosciences, Mahidol Universit, Salaya, Nakhonpathom 73170, Thailand. [2]aResearch Center for Neuroscience, Institute of Molecular Biosciences, Mahidol Universit, Salaya, Nakhonpathom 73170, Thailand. [3]Department of Pathology, Faculty of Medicine, Chulalongkorn University, Thailand. [4]Deaprtment of Physiology, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand.

Published: 21 February 2013

Reference

1. Goadsby PJ, Edvinsson L, Ekman R: **Vasoactive peptide release in the extracerebral circulation of humans during migraine headache.** *Ann Neurol* 1990, **28**:183-7, Xu X, Wang P, Zou X, Li D, Fang L, Lin Q. Increases in transient receptor potential vanilloid-1 mRNA and protein in primary afferent neurons stimulated by protein kinase C and their possible role in neurogenic inflammation. J Neurosci Res 2009;87:482-494.

doi:10.1186/1129-2377-14-S1-P72
Cite this article as: Chatchaisak *et al.*: Role of TRPV-1 in CGRP-mediated trigeminal sensitization. *The Journal of Headache and Pain* 2013 **14**(Suppl 1):P72.