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## Post-traumatic modulation of the pain pathway is amenable to treatment

Melanie B Elliott

Thomas Jefferson University, USA

Headache is a highly prevalent symptom in all severities of traumatic brain injury (TBI), and is one of the most common symptoms of post-concussion syndrome. Post-traumatic headache (PTH) disorders may persist months to years beyond the expected period of healing from inflammation after TBI. Despite being a common symptom of concussion, little is known about the pathogenesis of post-concussion headache. Previous findings by our laboratory provide evidence of post-traumatic modulation of the trigeminovascular pain pathway, a system that plays a significant role in migraine and has been proposed in the development of post-traumatic headache. Pro-nociceptive mechanisms will be discussed including calcitonin gene-related peptide (CGRP), nitric oxide, and prostaglandins within the pain pathway that may facilitate a chronic pain phenotype. Results will show how pharmacological blockade and genetic modulation are used to tease out molecular targets. This session will detail evidence of post-concussion behaviors such as headache-like behavior in animal models characterized along with neurochemical pain correlates. Findings emphasize the role of neuroinflammation in mediating post-traumatic morbidities, as well as potential areas of therapeutic intervention. Results will be presented to confirm a reciprocal relationship between CGRP and NO exists, and demonstrate their importance in pathological underpinnings of post-traumatic headache.

### Biography

Melanie B Elliott, PhD, is an Assistant Professor in the Department of Neurosurgery and Department of Neuroscience at Thomas Jefferson University. She has studied traumatic brain injury for over twelve years, and pain for the past nine. She has been awarded extramural funds from the DoD and Merck & Co. for her research program. She has been an invited speaker by the American Headache Society (2011, 2013), National Neurotrauma Society, (2013), and International Brain Injury Association (2014) to discuss post-traumatic cephalgia. Her long-term research objective is to increase the awareness and understanding of post-traumatic headache through research.

[melanie.elliott@jefferson.edu](mailto:melanie.elliott@jefferson.edu)