

Accepted Manuscript

The development of the nociceptive brain

Madeleine Verriotis, Pishan Chang, Maria Fitzgerald, Lorenzo Fabrizi

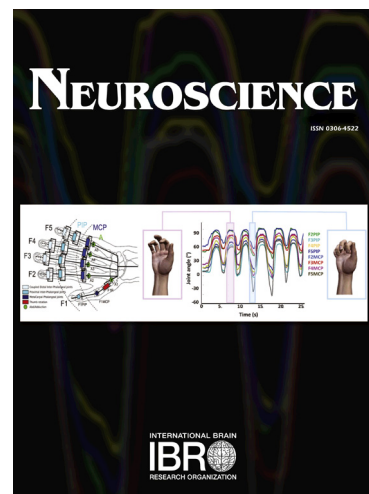
PII: S0306-4522(16)30331-1

DOI: <http://dx.doi.org/10.1016/j.neuroscience.2016.07.026>

Reference: NSC 17230

To appear in: *Neuroscience*

Accepted Date: 16 July 2016



Please cite this article as: M. Verriotis, P. Chang, M. Fitzgerald, L. Fabrizi, The development of the nociceptive brain, *Neuroscience* (2016), doi: <http://dx.doi.org/10.1016/j.neuroscience.2016.07.026>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

The development of the nociceptive brain

Madeleine Verriotis, Pishan Chang, Maria Fitzgerald* and Lorenzo Fabrizi

Department of Neuroscience, Physiology and Pharmacology,
University College London, London WC1E 6BT

- Corresponding Author: m.fitzgerald@ucl.ac.uk

Key words: infant; pain; cortex; connectome; imaging; somatosensory

Abstract

This review addresses the fundamental question of how we first experience pain, at the beginning of our lives. The brain is activated by peripheral tissue damaging stimulation from birth, but unlike other sensory systems, the pain system in healthy individuals cannot rely upon a prolonged activity dependent shaping through repeated noxious stimulation. Considering the importance of pain, remarkably little is known about when and how the nociceptive cortical network activity characteristic of the mature adult brain develops. We begin this review by considering the underlying framework of connections in the infant brain. Since this developing brain connectome is necessary, if not sufficient, for pain experience, we discuss the structural and functional development of cortical and subcortical networks that contribute to this network. We then review specific information on the development of nociceptive processing in the infant brain, considering evidence from neurophysiological and haemodynamic measures separately, as the two are not always consistent. Finally we highlight areas that require further research and discuss how information gained from laboratory animal models will greatly increase our understanding in this area.

Download English Version:

<https://daneshyari.com/en/article/5737920>

Download Persian Version:

<https://daneshyari.com/article/5737920>

[Daneshyari.com](https://daneshyari.com)