

Accepted Manuscript

Title: CANNULA IMPLANTION INTO THE LATERAL VENTRICLE DOES NOT ADVERSELY AFFECT RECOGNITION OR SPATIAL WORKING MEMORY

Author: Benjamin Seyer Vi Pham Anthony L. Albiston Siew Yeen Chai



PII: S0304-3940(16)30443-8
DOI: <http://dx.doi.org/doi:10.1016/j.neulet.2016.06.034>
Reference: NSL 32122

To appear in: *Neuroscience Letters*

Received date: 19-5-2016
Revised date: 16-6-2016
Accepted date: 18-6-2016

Please cite this article as: Benjamin Seyer, Vi Pham, Anthony L. Albiston, Siew Yeen Chai, CANNULA IMPLANTION INTO THE LATERAL VENTRICLE DOES NOT ADVERSELY AFFECT RECOGNITION OR SPATIAL WORKING MEMORY, *Neuroscience Letters* <http://dx.doi.org/10.1016/j.neulet.2016.06.034>

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.

CANNULA IMPLANTION INTO THE LATERAL VENTRICLE DOES NOT ADVERSELY AFFECT RECOGNITION OR SPATIAL WORKING MEMORY

Benjamin Seyer^a, Vi Pham^a, Anthony L. Albiston^b and Siew Yeen Chai^a

a. Biomedicine Discovery Institute, Department of Physiology, Faculty of Biomedical and Psychological Sciences, Monash University, Clayton, VIC 3800, Australia and

b. College of Health and Biomedicine, Victoria University, St Albans Campus, Melbourne, VIC 8001, Australia

ABSTRACT

Indwelling cannulas are often used to deliver pharmacological agents into the lateral ventricles of the brain to study their effects on memory and learning, yet little is known about the possible adverse effects of the cannulation itself. In this study, the effect of implanting an indwelling cannula into the right lateral ventricle was examined with respect to cognitive function and tissue damage in rats. Specifically, the cannula passed through sections of the primary motor (M1) and somatosensory hind limb (S1HL) cortices. One week following implantation, rats were impaired on the rotarod task, implying a deficit in fine motor control, likely caused by the passage of the cannula through the aforementioned cortical regions. Importantly, neither spatial working nor recognition memory was adversely affected. Histological examination showed immune cell activation only in the area immediately surrounding the cannulation site and not spreading to other brain regions. Both GFAP and CD-11b mRNA expression was elevated in the area immediately surrounding the cannulation site, but not in the contralateral hemisphere or the hippocampus. Neither of the inflammatory cytokines, TNF- α or IL-6, were upregulated in any region. These results show that cannulation into the lateral ventricle does not impair cognition and indicates that nootropic agents delivered via this method are enhancing normal memory rather than rescuing deficits caused by the surgery procedure.

KEYWORDS

Memory; spontaneous alternation; novel object recognition; astrocyte; glial; cannulation

Download English Version:

<https://daneshyari.com/en/article/6279399>

Download Persian Version:

<https://daneshyari.com/article/6279399>

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