PAIN INDUCED NEUROGENIC INFLAMMATION OF THE MENINGES

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Objective: Recently we discovered (Filipovic at al., J Neural Transm 2014;121:555-63) that neurogenic inflammation of dura (DNI) accompanies different types of pain in trigeminal region. Here we investigated weather pain in trigeminal regions can be separated from DNI.

Background: Neurogenic inflammation of meninges is accepted as important event in pathophysiology of migraine pain. However, in rat DNI can be evoked by different forms of pain in trigeminal area. Such meningeal reaction accompanies selectively pain in trigeminal region only, and does not occur for example in cranial or spinal meninges after sciatic nerve injury). Such pain induced DNI is associated by activation of CGRP in dural nerves (Lackovic at al., Br J Pharmacol. 2016; 173:279-91).

Design/Methods: All experiments were performed on male Wistar rats. After formalin injection, infraorbital nerve constriction injury, or temporomandibular joint inflammation animal developed mechanical allodynia. Allodynia was tested by von Frey filaments and dural extravasation was measured as colorimetric absorbance of Evans blue-plasma protein complexes. Dural infiltration with inflammatory cells was examined histologically.

Results: Using different drugs like morphine, botulinum toxin or triptans we found that drugs that reduce pain (used in migraine therapy) reduce DNI as well. Studying time course of pain and DNI we found that duration of DNI parallels duration of pain. Up to now we were not able to separate pain from DNI.

Conclusions:
Widely accepted understanding that neurogenic inflammation is an essential event in the pathophysiology of migraine pain, should be expanded. DNI apparently participates in the pathophysiology of various types of pain in trigeminal region. Thus it can be assumed that medications that reduce neurogenic inflammation should be effective in treatment of different headaches and other pain conditions in the trigeminal region.

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