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Absztraktfüzet

separation and laminar distribution of "useable" injection sites with respect to soma location of labelled cells.

The results obtained so far for clustered axons revealed cell type specific distribution of "useable" injection sites. Further analysis of other types of cell will help design experiments whereby the location of well labelled neurons within functional architectures becomes predictable.

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¹László Ducza, ¹Krisztina Holló, ¹Erzsébet Bakk, ¹Krisztina Hegedűs,

¹Zoltán Hegyi, ¹Miklós Antal

MAT ¹DE OEC Anatómiai, Szövet- és Fejlődéstan Intézet

SPINAL EXPRESSION OF INTERLEUKIN-1 β (IL-1 β) AND ITS RECEPTOR IN AN ANIMAL MODEL OF CHRONIC INFLAMMATORY PAIN

Nociceptive nerve impulses generated in peripheral tissues are conducted by sensory fibers to the superficial spinal dorsal horn. Following local processing, the nociceptive signals are transmitted to higher brain centers through ascending sensory pathways. In higher brain centers, the nociceptive signals evoke various motivational-affective behaviors including pain. Due to chronic inflammatory processes the nociceptive sensory system undergoes a chemical reorganization resulting in central sensitization and chronic pain.

The major goal of our experiments was to study the spinal expression of IL-1 β and the ligand binding subunit of its receptor (interleukin-1 receptor type 1 /IL-1R1/) in the Freund adjuvant-induced inflammatory pain model. In this model chronic pain was induced by subcutaneous injection of complete Freund adjuvant (CFA) into the hindpaw of Wistar rats (n=9). Mechanical allodynia indicating the development of chronic pain was measured by the modified von Frey test. On each experimental day (0-3 days) animals were sacrificed (n=3/ day) and protein was extracted from the dorsal horn of spinal cord to measure relative protein levels by western blot technique. At the peak of mechanical allodynia (day 3) we studied the expressional pattern of the IL1 receptor and its ligand IL1 β by immunohistochemical method. Western blot results show gradual elevation of IL-1R1 during the course of the model.

While confocal microscopy shows that IL-1R1 was expressed not only on neurons, but also by astrocytes and microglial cells. IL1 β was found to be remarkably up-regulated in the spinal astrocytes and to a lesser amount it is produced by microglia. Our results suggest that the IL-1R1 and the IL-1 β contribute to neuronal-glial interactions, and the development of chronic inflammatory pain.

¹Zsófia Földvári, ¹Csilla Somogyi, ¹Csaba Matta, ¹Éva Katona, ¹Roland Takács,

¹Tamás Juhász, ¹Róza Zákány

UNIVERSITY OF DEBRECEN, MEDICAL AND HEALTH SCIENCE CENTRE

¹Department of Anatomy, Histology and Embryology

STUDYING TRANSIENT RECEPTOR POTENTIAL VANILLOID (TRPV) CHANNELS ON MOUSE PRIMARY MESENCHYMAL MICROMASS CULTURES

Differentiation of chondrogenic cells is affected by various external stimuli during embryonic and fetal life. Members of the TRPV (Transient Potential Receptor Vanilloid) family are polymodal, non selective cation channels which represent important sensors of the environmental changes, such as temperature, ion concentration or mechanical load. TRPV4 membrane channel has gained an important role in cartilage formation, as gain of function mutation of TRPV4 causes severe chondrogenic failure. However, little is known about the possible role of other TRPVs in chondrogenesis.

As a well accepted model for studying in vitro chondrogenesis, mouse micromass cell cultures were established from cells isolated from anterior and posterior limb buds of 11.5-day old mouse embryos. According to our observations, spontaneous cartilage formation occurs within 7 days in this cell culture system.

The mRNA expression pattern of all the six members of TRPV subfamily was monitored with RT-PCR through the seven days of culturing. These vanilloid receptors were also traced in newborn and adult mouse tissue samples. A popular member of the capsaicinoids, like the capsaicin (CAP) or the capsaicin analogue resiniferatoxin (RTX) is a well known agonist of TRPV1, therefore we applied them in different concentrations on these chondrifying cell cultures. For assessing the effect of these pharmacons on cartilage differentiation toluidine blue dye extraction and dimethyl-methylene blue staining was applied. TRPV1, 2, 3, 4, 5 and 6 mRNA expressions were detected in mouse micromass cultures. It seems that the application of CAP or RTX for 48 hours on the first and second days, when commitment of chondrogenic cells takes place in mouse HDCs, is dose dependent: low concentration (10 μ M CAP) of agonists resulted in a slight elevation in the amount of the metachromatic area of the ECM, while higher concentrations (100 μ M CAP) decreased the amount of the ECM. Other experiments are in progress, the results will be presented on our poster.

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¹Botond Gaál, ¹Éva Rácz, ¹Klára Matesz

UD MEDICAL AND HEALTH SCIENCES CENTER ¹Department of Anatomy,
Histology and Embryology

ESTABLISHMENT OF EXTRACELLULAR MATRIX MOLECULES DURING CHICK EMBRYO'S NEURAL DEVELOPMENT

The behavioural actions of newly hatching chickens (*Gallus domesticus*) require an early but considerable development of CNS areas, responsible for basic motor actions, sensory functions and homeostasis. Thus are they able to walk, see, chirp or feed themselves, like all precocial avians. Previous studies revealed, that the macromolecules of the extracellular matrix (ECM) around neurons highly correspond to their activity, and vice-versa.

We intended to study the expression of hyaluronan (HA) in the ECM assembly around neurons, during embryonic development, in the vestibular nuclei of chicken embryos.

We gained embryos by aborting incubation at 9 different developmental stages. After paraffin embedding and sectioning histochemistry was performed to visualize the HA. Parallel with this the mRNA of hyaluronan synthases (HAS2 & HAS3) were detected with RT-PCR, in all stages.

HA was present in all vestibular nuclei from the earliest stages of development. In the lateral vestibular nucleus its amount increased from 11 days (E11), but the perineuronal net (PNN), a condensation of the ECM around neurons, first formed moderately at E13, then its intensity gradually elevated, in the neuropil the staining intensity rose till E13. In the medial vestibular nucleus neuropil labelling enforced till E15, and moderate PNN was identifiable at hatching stage. In the superior vestibular nucleus HA presence grew in the neuropil till E15 stage, and moderate PNN was found in E20. In the descending