P0745 / #3577

Topic: AS07 Aging and Neurodegenerative Disorders

ALTERED ENDOGENOUS PAIN INHIBITORY FUNCTION IN OLDER ADULTS WITH CHRONIC PAIN: AN FMRI STUDY.

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It is becoming clear that aging and chronic pain present mutual interactions. In this sense, it is well known that chronic pain accelerates brain aging, but also that aging affects pain experience and its neural substrates. Despite this, little research has analyzed changes in brain functional connectivity in older adultswho also suffer from chronic pain. We aimed to examine fMRI resting-state functional connectivity(rsFC) as well as descending nociceptive modulatory pathways in older adults with chronic pain in comparison to older adults without pain. Thirty older adults with chronic musculoskeletal pain (69,5 ± 6.58 years; 15 males), 29 healthy older adults (70.483 ± 4.60 years; 15 males) and 30 younger adults (20.0 ± 1.58 years; 15 males) participated in the study. Resting-state fMRI data was analyzed by using region of interest (ROI) to ROI rsFC analysis focusing onregions implicated in sensory and affective dimensions of pain and descending pain modulation. Descending nociceptive inhibitory and facilitatory mechanisms were also examined. The former was examined by using a conditioned pain modulation paradigm (CPM) with the interdigital-web pinching as the conditioning stimuli and pressure pain threshold as test stimulus. Temporal summation (TS) to electrical stimuli examined the later. Results showed that chronic painolder adults displayed reduced rsFC between pain inhibitory regions in comparison to younger adults (bilateral thalamus-periaqueductal grey matter(PAG)) and healthy older adults (middle prefrontal cortex with dorsolateral prefrontal cortex(L), amygdala(R) and PAG). Moreover, chronic pain older adults showed reduced analgesia in the CPM in comparison to healthy older and younger adults, while no differences were found in TS. Altogether suggest that suffering from pain in older adults leads to a dysfunction of pain inhibitory processes which significantly surpass those produced by normal aging. These results need be considered when assessing and treating pain in older adults. Supported by the Spanish Ministry (PID2019-110096GB-I00/AEI /10.13039/501100011033).

Declaration of Interest Statement: Supported by the Spanish Ministry (PID2019-110096GB-I00/AEI /10.13039/501100011033).

https://doi.org/10.1016/j.ibneur.2023.08.750

P0746 / #2230

Topic: AS07 Aging and Neurodegenerative Disorders

AMYLOID-BETA SCAVENGERS' EXPRESSION IN THE CHOROID PLEXUS IS AGE-, SEX-, AND CIRCADIAN-DEPENDENT

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Amyloid-beta (Aβ) accumulation in the brain is a major hallmark of Alzheimer's disease. An imbalance between Aβ production and elimination has been associated with the impairment of Aβ clearance mechanisms, which results from decreased expression of Aβ scavengers. The choroid plexus due to its privileged location displays a critical role in Aβ clearance allowing Aβ transport from cerebrospinal fluid to blood. Additionally, synthesizes and secretes several proteins involved in Aβ degradation and transport (e.g., Transthyretin-*Ttr*, Apolipoprotein J-*ApoJ*, gelsolin-*Gls*). The choroid plexus function is regulated by sex hormones and is affected by aging. Also, the choroid plexus holds a circadian clock. Therefore, we aimed to investigate if Aβ clearance mechanisms in the choroid plexus are regulated by age, sex hormones, and circadian rhythm. The mRNA and protein expression of *Ttr, ApoJ*, and *Gls* was analyzed in lateral choroid plexus from newborn, 1-month, and 3-months male and female rats by real-time RT-PCR. Also, the circadian profile of Aβ-scavengers expression was assessed in adult male and female gonadectomized rats. We found that mRNA expression and both intracellular and secreted protein levels of Aβ scavengers are age-, sex-, and circadian-dependent. Our findings reinforce the crucial role of the choroid plexus in brain homeostasis, particularly, in Aβ levels balance. Also, suggests that the choroid plexus's ability to promote Aβ clearance might be compromised due to aging and circadian disturbances. Understanding the regulation of Aβ clearance mechanisms at the choroid plexus might contribute to identifying novel drug targets and prevent neurotoxic accumulation in the brain as a consequence of Aβ accumulation.

Declaration of Interest Statement: None

https://doi.org/10.1016/j.ibneur.2023.08.751

P0747 / #2849

Topic: AS07 Aging and Neurodegenerative Disorders

ASSESSMENT OF IN VITRO HUMAN NEUROMUSCULAR JUNCTION FUNCTIONALITY USING A CUSTOM MICRO ELECTRODE ARRAY (MEA) PLATFORM FOR THE STUDY OF SPINAL MUSCULAR ATROPHY

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Signal transmission from motor neurons (MNs) to innervated muscle fibers is crucial for synaptic function, viability, and