

mEPSC amplitude. Importantly, the mEPSC frequency but not the mEPSC amplitude recorded from spinal slices obtained from lupus mice with chronic pain was reduced when the TLR7 blocker (ODN2088) was perfused into the recording bath. In conclusions, our studies indicate that increased TLR7 signaling activity is associated with spinal neuroinflammation, and is engaged in the enhanced glutamatergic synaptic activity and genesis of chronic pain in lupus mice.

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Topic: AS09 Motor and Sensory Systems

ASSESSMENT OF GAIT PARAMETERS OF QUADRUPEDAL LOCOMOTION IN MACAQUE MONKEYS FOLLOWING IMPLANTATION OF DEEP BRAIN NEURAL PROBES

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The purpose of this study was to evaluate the gait parameters of macaque monkeys following the implantation of a neural probe, which was done using a custom-built CT/MRI-compatible stereotaxic frame under general anesthesia. Nine rhesus monkeys and three cynomolgus monkeys were included, and three of them were implanted with a neural probe that could continuously monitor deep brain activity while freely moving for four weeks. The deep brain recording neural probe was inserted vertically into the right subthalamic nucleus (STN) and fixed to the skull using dental cement, with the battery pocket located on the back (interscapular space) and the battery line inserted from the skull to the back incision using the subcutaneous tunneling technique. Gait parameters were characterized using a pressure-sensing walkway, and longitudinal changes in these parameters and the symmetry index were compared to baseline data that was acquired prior to the surgical implantation. The study found no statistically significant differences in gait analysis parameters following neural probe implantation, and most median symmetry index values were nearly zero, indicating a symmetrical gait pattern. These results suggest that neural probe implantation did not cause motor dysfunction during the post-recovery period, and the study provides valid methods for assessing gait parameters and demonstrating macaque monkeys' specific characteristics of quadrupedal locomotion, which can serve as a basis for assessing gait normality.

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ENHANCED ELECTRICAL BRAIN ACTIVITY TO CHANGES IN NATIVE SPEECH SOUNDS - A CROSS-LINGUISTIC STUDY COMPARING NATIVE SPEAKERS OF FINNISH AND CHINESE

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Native language experience influences phoneme perception. But it is not known how the brain responds to native and foreign features in phonemes in passive and active listening conditions. In Chinese, tonal changes in vowels can modify words' meaning, while in Finnish, duration changes in phonemes can also signal words' meaning. But these two features have no semantics in the other language. We recorded event-related potentials (ERPs) to tonal and duration changes in a repetitive vowel /a/ in native speakers of Chinese (18) and Finnish (17). In passive and active oddball stimulus conditions, a frequently presented standard stimulus was occasionally replaced by a deviant stimulus, and participants were correspondingly required to focus on watching a silent movie and press a key when hearing a different sound. ERPs reflecting change detection (mismatch negativity; MMN and N2b) and attentional shifts towards deviant sounds (P3a and P3b) were extracted by using principal component analysis (PCA), and their amplitudes were investigated. When the speech sounds were presented in the passive listening condition, the speech sound streams with duration changes elicited increased responses in Finnish compared to Chinese speakers for both standard and deviant sounds in the MMN time window. However, no group differences were observed in P3a. No group difference was found in the MMN amplitude for tones, but P3a to tones was increased for both standard and deviant stimulus in Chinese compared with Finnish speakers. No robust group differences were found when the participants attended the same speech sounds. The results show language experience can enhance overall sensitivity to task-irrelevant native speech sounds and that attention can enhance the change detection of brain responses to foreign speech sounds up to the level of native speakers.

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