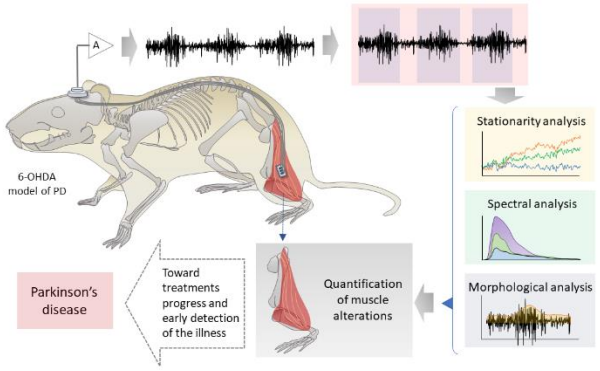
Muscle alterations in a Parkinson's disease animal model

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Abstract (300 word limit)

The most common Parkinson's disease animal model induces massive nigrostriatal degeneration by intracerebral infusion of 6-hydroxydopamine (6-OHDA). Motor deficits in rat models of Parkinson's disease were previously addressed in other works. However, an accurate quantification of muscle function in freely moving PD-lesioned rats over time has not been described until now. In this work we address the muscular activity characterization of a 6-OHDA-lesion model of PD along six weeks post-lesion based on spectral and morphological analysis of the signals. Using chronic implanted EMG electrodes in a hindlimb muscle of freely moving rats, we have evaluated the effect of the PD neurotoxic model in the muscular activity during locomotion. EMG signals obtained from animals with different time post-injury were analyzed. Power spectral densities were characterized by the mean and median frequency and the EMG burst stationarity was previously verified for all animals. Our results show that as the time post-lesion increases both frequency parameters decrease. Probability distribution function analysis was also performed. The results suggest that contractile dynamics of the biceps femoris muscle change with time post-lesion. We have also demonstrated here the usefulness of frequency parameters as biomarkers for monitoring the muscular function changes that could be used for early detection of motor dysfunction.

Image



Recent Publications (minimum 5)

1. **Albarracin AL** & Farfan FD. Muscle function alterations in a Parkinson's disease animal model: Electromyographic recordings dataset. Data in Brief. doi.org/10.1016/j.dib.2021.107712
2. Teruya PY, Farfán FD, Pizá ÁG, Soletta JH, Lucianna FA and **Albarracín AL.** Quantifying muscle alterations in a Parkinson's disease animal model using electromyographic biomarkers. Med Biol Eng Comput. 2021;59(9):1735-1749.
3. Scharff Moritz, Lucianna Facundo A., Pizá Alvaro G., **Albarracín Ana L.,** Alencastre Miranda Jorge H. and Farfán Fernando D. Validation of a Mechanical Model of the Active Scanning Process in the Rat Vibrissal System. Revista Argentina de Bioingeniería, 25 (1), 2021.
4. Moreno-Ruiz B, Mellado S, Zamora-Moratalla A, **Albarracín AL**, Martín ED. Increase in serum prolactin levels in females improves the performance of spatial learning by promoting changes in the circuital dynamics of the hippocampus. Psychoneuroendocrinology. 2020; 124:105048.
5. Javier Alegre-Cortés, Cristina Soto-Sánchez, **Albarracín AL**, Fernando D Farfán, Mikel Val-Calvo, Jose Manuel Fernandez, Eduardo Fernandez. Towards an improvement of the analysis of neural coding. Frontiers in neuroinformatics. 2018.

Photograph



Dr. Albarracín is specialized in neurophysiology. Her initial scientific research focused on the peripheral nervous system of the vibrissal system. She has extensive experience in extracellular electrophysiological and patch-clamp techniques in anesthetized and in awake animals. Her most important contributions in the sensorial vibrissal system are related to neuronal coding in the vibrissal system, specifically in the texture discrimination code. However, her most recent research is carried out in the neurodegenerative diseases field, specifically she is working on motor deficits and biomechanical aspects in an animal model of Parkinson's disease. These studies include gait studies and analysis of muscular and cortical electrical activity in awake animals in order to establish biomarkers related to the pathology.

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Notes/Comments: