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A PET study with [11-C] Raclopride in Hemiparkinsonism model: Preliminary results on the effect of a TiO₂DA matrix implanted in the caudate nucleus

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It is now widely accepted that compensatory mechanisms are involved during the early phase of Parkinson's disease (PD) to delay the expression of motor symptoms. Our objective was to determine the effects on motor behavior in a TiO₂DA implant inserted in the caudate in a hemiparkinsonism rat model and its correlation with the *in vivo* binding of [11-C] raclopride to D2 dopamine receptors in its basal ganglia. Each rat underwent a PET study, before and after treatment with microimplant. Male Wistar rats (250-300 gr) were used and divided into 4 groups: Sham, Lesioned (Lx), Lx+implant and Implant. Post-lesion for 21 days anxiety behavior and locomotor activity of the rats of each group through the open field test was evaluated. The test was made in an acrylic box (with transparent walls and floor), whose floor is divided with painted black lines forming squares and illuminated with floodlights. The test was recorded for five minutes; the following measurement parameters were assessed: total distance traveled and the number of crossed lines marked on the floor. The tests were recorded. In each group analysis of microPET was done, each rat underwent a PET study, before and after treatment with microimplant. The implant induced an increase in the *in vivo* binding of [11C] raclopride in the striatum of hemiparkinsonian rats. This observation indicates that there is a higher amount of transporters bound to striatal dopamine; higher dopamine levels were found in the Lx+Imp group than in the Lx group as well as a larger number of dopaminergic neurons in striatum in the histological analysis. This observation indicates that the microimplant with dopamine produce an increase in extracellular levels of dopamine sufficiently to inhibit raclopride binding, this effect probably due to dopamine release from TiO₂DA matrix implanted in caudate nucleus.

Biography

S Hernandez Castro is a 3rd year Medical student from the Universidad Nacional Autonoma de Mexico. She has been a part of the investigation program from the Faculty of Medicine since 2014 and she was part of the Organization Committee of the International Contest of Medical Knowledge organized in the faculty since the same year. Also, she is a Technician in Histopathology certified by the same university.

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