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Partial depletion of CD25+ T cells prevents neurological deficit and decreases cerebral impairment in a transient cerebral ischemia model in rats

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Immunopathology of stroke is highly complex.Whereas is known that $CD4^+$ and $CD8^+$ T cells are mediators of inflammation and neurological deficits, the role of Regulatory T cells (Treg) is still controversial. Previous evidences match in that later cells will have a deleterious role on acute stages of ischemia, by disrupt the microvascular homeostasis. But earlier reports suggested that in late stages havea neuroprotective effects. To evaluate the role of Treg in late stages of stroke, we injected an anti-CD25 antibody to reduce the level of Treg in wistar rats, two days later, the ischemia was induced transiently by occlusion of middle cerebral artery (tMCAO) during 60 minutes and evaluated 7 days post-reperfusion. Nine days after injection, a reduction of 67.5%and 63.8% in splenic $CD4^+CD25^+$ and $FOXP3^+CD25^+$ T cells were observed respectively, along with a less efficiency of reduction of $CD4^+FOXP3^+$ in spleen. Expression of FOXP3 in sorted splenic $CD4^+CD25^+$ cells was 34%, and only suppressed a 25% of the proliferation of $CD4^+CD25^-$ through anex vivo suppression assays in control animals. tMCAO rats treated with anti-CD25 presented less neurological deficit and they did not develop cerebral tissue damage compared with the PBS treated animals, which had a higher deficit and large infarcts at 7 days post reperfusion. These findings suggest that anti-CD25 treatment in a tMCAO model in rats reduces preferentially a population of T cells with effector phenotype, more than a Treg population, leading to neuroprotection by suppression of the the pathogenic response of effector T cells.

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Biography

Ana Lucia Rodriguez-Perea is a Bacteriology graduated from the University of Valle (Colombia); did her MSc degree in Biomedical Sciences at the University of Antioquia in 2011. Currently, she is doing her PhD in the same University and last years, she has been focusing on the role of Regulatory T cells in several contexts, such as stroke and asthma. She is studying the immunomodulatory effects of molecules such as statins and HDL that could up-regulate the frequency or function of these cells with potential uses in improving diseases where T cells responses are altered, as stroke and asthma.

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