Effects of Maternal dysbiosis and early life stress on hypothalamic cytokine expression in the rat dams and pups

Poster

Neurobiología de enfermedades - Neurobiology of disease

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Maternal microbiota plays a critical role in shaping the development of the offspring's neuroimmune system. Additionally, adverse early life events such as maternal separation (MS) disrupt brain development neuroimmune cells and gut microbiota components. The aim of this study was to evaluate the effects of maternal dysbiosis and early life stress on cytokine expression in the hippocampus and hypothalamus of rat dams and their offspring. Pregnant Sprague Dawley rat were used. On embryonic day 14, half of the dams received an antibiotic cocktail to induce maternal dysbiosis (DMAB), while the others remained under standard conditions (STD). At postnatal day 1 (P1), litters were randomized and assigned to four groups: STD+CONT, STD+MS, DMAB+CONT y DMAB+MS. In the MS groups, pups were separated from the nest for 3hours per day from P1-14. At P15, all animals were euthanized, and hippocampal and hypothalamic tissues were collected from dams and offspring for gene expression analysis. Our results showed that DMAB increased the expression of *il-6* and *tnf-α* in the hypothalamus, with no effect in the hippocampus. In contrast, MS decreased *il-6* expression in the hypothalamus of the offspring, without affecting the hippocampus. These findings suggest that DMAB and MS differentially affect cytokine expression in

the hypothalamus of both dams and their offspring.