Impact of sleep restriction during the postpartum period on hormonal and immunological parameters in mother rats and their offspring

Poster

Neurofisiología - Neurophysiology

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Sleep disturbances can trigger a wide range of physiological consequences. Although the postpartum period itself alters maternal sleep, little is known about the effects of additional sleep loss during this stage. We aimed to determine whether acute sleep restriction (ASR) or chronic sleep restriction (CSR) could induce hormonal and/or immunological changes in mother rats and their offspring.

Mother rats were implanted for polysomnographic recordings. From postpartum day 5 to day 9 (PPD5–9), lactating dams were assigned to one of three groups: CSR (6 h/day of sleep deprivation for five days), ASR (6 h of sleep deprivation only on PPD9), or control. On PPD9, milk and blood samples from mothers and pups were collected. Cytokines, antibodies, leukocyte profiles, and hormones were analyzed in maternal

and pup serum samples.

Maternal immune and hormonal parameters remained unaffected by sleep restriction. IgG levels were lower in male pups from ASR mothers (5560 ± 734 µg/mL) compared with controls (8666 ± 463 µg/mL; $p = 0.025$). Female (4.10 ± 0.58) and male (3.81 ± 0.42) pups from CSR dams showed higher absolute lymphocyte counts than controls (females: 2.28 ± 0.25 × 10^3/µL, $p = 0.004$; males: 2.44 ± 0.25 × 10^3/µL, $p = 0.029$). Female pups from CSR mothers showed lower TSH and LH levels, while male pups exhibited increased GH levels compared with controls.

These findings indicate that maternal sleep restriction alters offspring immune and endocrine parameters despite the absence of detectable maternal changes, with some effects appearing to be sex-dependent.

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