NEONATAL ENDOTOXIN EXPOSURE ON BRAIN OXIDATIVE DAMAGE DURING POLYMICROBIAL SEPSIS IN ADULT RATS

Florentino, D.¹; Goldim, M.¹; Danielski, L.G.¹; Motta, D.D.¹; Vieira, A.¹; Martins, M.M.¹; Bonfante, S.R.S.A.¹; Nascimento, D.Z.¹; Freitas, M.J.¹; Fortunato J.J.¹; Petronilho F.¹

¹Laboratório de Fisiopatologia Clínica e Experimental, Programa de Pós-graduação em Ciências da Saúde, Tubarão, Santa Catarina, Brazil

Introduction: Sepsis is a major infectious complication in health care, for both their incidence and severity, as well as to the potential for progression to death. Future sepsis treatment strategies can focus on the balance between immune pro and anti-inflammatory actions in a timely manner. Objectives: Evaluate the influence of immunization performed in the neonatal period with lipopolysaccharide (LPS) on brain oxidative damage in rats submitted to polymicrobial sepsis in adulthood. Materials and methods: Male Wistar rats with 14 days were treated with an intraperitoneal injection of LPS (100 mg/kg) or saline. With 60 days of age were submitted to the animal model of sepsis by cecal ligation and puncture (CLP). They were divided into saline+sham, LPS+sham, saline+CLP and LPS+CLP and 24 hours after CLP was assessed in the hippocampus and prefrontal cortex the oxidative damage to lipids (TBARS) and proteins (carbonyl and sulfhydryl), activity of the antioxidant enzymes superoxide dismutase (SOD) and catalase (CAT), as well as in the cerebrospinal fluid (CSF), the levels of nitrite and nitrate (N/N). Results: For the analysis of oxidative damage in lipids and carbonyl formation in the prefrontal, we found a decrease in the LPS + CLP group compared to the saline + CLP group. In the hippocampus, LPS administration was effective in maintaining the integrity in the sulfhydryl groupings on CLP group. In the CSF, the N/N level was increased in saline+CLP group compared with saline+sham and LPS+CLP decreased this level. We also demonstrated that LPS increased the CAT activity in CLP rats in the hippocampus. On the other hand to SOD activity was not presented significative results. Conclusions: These data suggest that neonatal LPS challenge is able to promote beneficial effects on the brain oxidative stress to polymicrobial sepsis in adulthood.

Key Words: Sepsis, LPS, oxidative stress.
Acknowledgements: CAPES