10 Hz (n=3), 60Hz (n=3), 80Hz (n=3) and sham (n=3). Administration of Naloxone a non-selective opioid receptor antagonist or SR141716A an antagonist of CB1R was used to pharmacologically evaluate the involvement of both opioids and CB1 receptors in ESIC-induced analgesia. Results were analyzed by two-way ANOVA followed by the Bonferroni post-test and represented by mean±standard error; $p < 0.05$.
Resultados e Conclusões:
Data demonstrated that ESIC at the frequencies of 10Hz and 80Hz did not induce antinociception to CCSN-rats, while 60Hz was effective in inducing analgesia in all evaluated times ($p < 0.0001$ - Pre1 ESIC 60Hz vs Post 1 ESIC 60 Hz; $p=0.0001$ – Pre 1 ESIC 60Hz vs Post 5 ESIC 60Hz; p=0,0008 - Post 5 Sham vs Post 5 ESIC 80Hz.). Both Naloxone (mean: ESIC+NAL Pre:42,57±4,63; Post:28,14,0±3,59; p=0,0010) and SR141716A (mean: ESIC+SR Pre: 52,50±3,88; Post: 35,75,0±3,27; $p <$ 0,0001) treatments reversed 60Hz ESIC-induced analgesia. Conclusion: ESIC at 60Hz induces analgesia in an experimental model of refractory pain, without interfering with general activity of animals. Also ESIC-induced analgesia involves both opioid and CB1R.
Palavras-chaves: CANNABINOID RECEPTORS, ELECTRIC STIMULATION, INSULAR CORTEX, NEUROPATIC PAIN, OPIODID RECEPTORS
Agência Fomento: CAPES

15.009 - EXERCÍCIO FORÇADO E ESTIMULAÇÃO TRANSCRANIANA POR CORRENTE CONTÍNUA (ETCC) PROMOVEM EFEITOS ANTINOCICEPTIVOS E MODULAM PARÂMETROS INFLAMATÓRIOS E NEUROTRÓFICOS NA MEDULA ESPINAL EM UM MODELO DE DOR CRÔNICA: EFEITOS EM LONGO-PRAZO

FORCED-EXERCISE AND TRANSCRANIAL DIRECT CURRENT STIMULATION (tDCS) PROVIDE ANTINOCICEPTIVE EFFECTS AND MODULATE INFLAMMATORY AND NEUROTROPHIC PARAMETERS IN THE SPINAL CORD IN A CHRONIC PAIN MODEL: LONG-TERM EFFECTS
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Instituição: 1 UFRGS - UNIVERSIDADE FEDERAL DO RIO GRANDE DO SUL (AVENIDA PAULO GAMA, 110 - BAIRRO FARROUPILHA, PORTO ALEGRE-RS), 2 HCPA - HOSPITAL DE CLÍNICAS DE PORTO ALEGRE (RUA RAMIRO BARCELOS, 2350 - BAIRRO SANTA CECÍLIA, PORTO ALEGRE-RS), 3 LASALLE - UNIVERSIDADE LA SALLE (AVENIDA VICTOR BARRETO, 2288 - BAIRRO CENTRO, CANOAS-RS)Introdução:
Introduction: Chronic pain management remains a challenge due the refractory response to the drug treatment. Evidences suggest that the exercise plays an important antinociceptive role, as well as, the transcranial direct current stimulation (tDCS) therapy in different chronic pain conditions. However, the effect of association between exercise and tDCS needs to be elucidated.
Objetivos:
Aim: Our objective was to investigate the antinociceptive and neuromodulatory effects of the association between exercise and/or tDCS in a chronic neuropathic pain model (NP) in rats.
Métodos:
Methods: 78 male Wistar rats (60 days-old) were randomized into 13 groups: Control, Control, Sham-Pain; Sham-Pain+Exercise; Sham-Pain+Sedentary+Sham-tDCS; Sham-Pain+Sedentary+tDCS; Sham-Pain+Exercise+Sham-tDCS; Sham-Pain+Exercise+tDCS; Pain; Pain+Exercise; Pain+Sedentary+Sham-tDCS; Pain+Sedentary+tDCS; Pain+Exercise+Sham-tDCS; and Pain+Exercise+tDCS. NP was induced by sciatic chronic constriction (CCI). Mechanical and thermal hyperalgesia were assessed using von Frey (VF) and Hot Plate (HP) tests at: baseline, 7th and 14th days after CCI surgery; and immediately, 24h and 7 days after treatment. Rats were subjected to treadmill and/or tDCS (0.5mA) for 20min/day/8days from 15th day to 22nd day. At 48h or 7 days after the end of treatments, rats were decapitated, and the spinal cord was collected to measure BDNF and IL-4 levels. Behavioral data were analyzed by GEE/Bonferroni and biochemical data by one-way ANOVA/SNK, and $P < 0.05$ was considered significant. This experiment was approved by CEUA-HCPA (#20170061).
Resultados e Conclusões:
Results: At baseline we found no difference in the nociceptive response between groups ($P > 0.05$). We observed interaction between group vs time upon mechanical and thermal hyperalgesia (Wald χ^2=1456.094 e Wald χ^2=3419.908; respectively; n=78; $P < 0.05$). On 7th day after CCI, Sham and Pain groups exhibited hypernociceptive behavior response ($P <$ 0.05); and at 14th day, only Pain groups exhibited that behavior. Immediately, 24h and 7 days following the last treatment session, exercise or tDCS partially

reverted mechanical hyperalgesia in the Pain groups; however at 7 days after the end of treatments, the association between tDCS+Exercise in Pain group showed more pronounced reversion in this behavior (P < 0.05). tDCS and/or exercise completely reverted the thermal hyperalgesia at immediately, 48h and 7 days following the treatment (P < 0.05). In the spinal cord, the Pain and Pain+Sedentary+Sham-tDCS groups displayed an increased BDNF levels at 48h and 7 days compared to other groups (F(12,65)=2.542; P < 0.05). The IL-4 levels were increased in Sham-Pain+tDCS and Pain-sedentary+tDCS groups in comparison to others at 48h (P < 0.05). At 7 days after treatment, the IL-4 levels were reduced in the Pain group (F(12,65)=3.915; P < 0.05). Conclusions: We point out that the exercise and tDCS, trigger antinociceptive effect in NP model in rats; with possible involvement of BDNF and IL-4 levels in the spinal cord.

Palavras-chaves: TRANSCRANIAL DIRECT CURRENT STIMULATION, PHYSICAL EXERCISE, NEUROPATHIC PAIN, BDNF, IL-4

Agência Fomento: CNPq, CAPES, FIPE-HCPA, FAPERGS

15.010 - EFEITO TERAPÊUTICO E PREVENTIVO DO EXERCÍCIO VOLUNTÁRIO EM RODA DE ATIVIDADE NA DOR CRÔNICA E NO COMPORTAMENTO DO TIPO DEPRESSIVO INDUZIDOS POR ESTRESSE POR SUBJUGAÇÃO SOCIAL REPETIDA

PREVENTIVE AND THERAPEUTIC EFFECT OF VOLUNTARY RUNNING EXERCISE ON SOCIAL DEFEAT STRESS (SDS)-INDUCED CHRONIC PAIN AND DEPRESSIVE-LIKE BEHAVIOR IN MICE.

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Major depressive disorders (MDD) and chronic pain (CP) affect significant portion of the world's population, generating a great economic burden on public health. Given the high prevalence of those both pathological conditions, it is not a surprise epidemiological studies showing great relationship between them. In this context, the social defeat stress (SDS) model was standardized in mice and trigger depressive-like behavior and chronic pain.

Objetivos:

Based especially on clinical trials showing an effective preventive and therapeutic effect of physical exercise on chronic pain and MDD symptoms, we aimed to investigate if the voluntary running wheel exercise (RWE) can exert preventive and therapeutic effects in mice submitted to the SDS, using antidepressant fluoxetine as positive control.

Métodos:

We first evaluated the therapeutic effect of physical exercise on hyperalgesia (electronic von Frey test) and depressive-like behavior of social avoidance (social interaction test) induced by chronic SDS. For this, mice started performing RWE after submitted to the chronic SDS (10 days) followed by weekly assessment of the mechanical nociceptive threshold and social interaction. We next evaluated the preventive effect of physical exercise. For this, mice performed RWE before and during chronic SDS followed by assessment of the mechanical nociceptive threshold and social interaction.

Resultados e Conclusões:

Our results showed that 14 days of RWE, but not fluoxetine, can reverse SDS-induced hyperalgesia in susceptible (Sus) and resilient (Res) mice (variation of the mechanical nociceptive threshold □ control: -0.2 ± 0.1; Res/Sed:1.6 ± 0.3; Res/Ex: 0.1 ± 0.3; Res/Flu: 0.9 ± 0.4; Sus/Sed: 2.1 ± 0.1; Sus/Ex: 0.2 ± 0.3; Sus/Flu: 1.2 ± 0.5; N=5-15; p < 0.0001 between control and all groups except for the Res/Ex and Sus/Ex). Our results also showed that 28 days of RWE, as well as fluoxetine treatment, can reverse social avoidance-induced by SDS (time in interaction zone □ control: 58.4 ± 1.8; Res/Sed: 62.6 ± 3.3; Res/Ex: 50.7 ± 9.0; Res/Flu: 52.6 ± 4.3; Sus/Sed: 24.0 ± 4.6; Sus/Ex: 48.0 ± 8.6; Sus/Flu: 47.3 ± 8.8; p < 0.01 between control and Sus/Sed). In addition, RWE was effective preventing both hyperalgesia and social avoidance induced by SDS (time in interaction zone □ Sed/NS: 2.1 ± 0.2; Ex/NS: 1.7 ± 0.2; Sed/SDS: 0.7 ± 0.1; Ex/SDS: 1.6 ± 0.4; p < 0.01between Sed/NS and Sed/SDS; variation of the mechanical nociceptive threshold □ Sed/NS: 0.1 ± 0.1;