

European Respiratory Society Annual Congress 2012

Abstract Number: 5180

Publication Number: P255

Abstract Group: 4.1. Clinical physiology and Exercise

Keyword 1: Physiology **Keyword 2:** Experimental approaches **Keyword 3:** No keyword

Title: Experimental air-hunger inhibits laser-evoked potentials

Dr. Louis 20347 Laviolette louis.laviolette@gmail.com¹, Dr. Laurence 20348 Dangers laudangers@gmail.com MD¹, Prof. Dr Thomas 20349 Similowski thomas.similowski@psl.aphp.fr MD¹ and Dr. Capucine 20350 Morelot-Panzini capucine.panzini@gmail.com MD^{1,2}. ¹ Laboratoire de Physiopathologie Respiratoire, Université Paris 6 Pierre et Marie Curie, ER10UPMC, Paris, France and ² Division of Pulmonary, Critical Care and Sleep Medicine, Beth Israel Deaconess Medical Center, Boston, MA, United States .

Body: Rationale: Counter-irritation is the attenuation of a painful sensation by a newly occurring heterotopic stimulus that must be of noxious nature. Dyspnea-pain counter-irritation has been described with experimental dyspnea of the work/effort type, which inhibits both the spinal nociceptive reflex (about 50% reduction in amplitude) and laser evoked cortical potentials (LEPs, about 35% reduction in amplitude). In contrast, experimental air hunger has no influence the RIII reflex. Its effects on LEPs are unknown. Methods: LEPs were obtained using a CO₂ laser stimulator in twelve healthy naïve subjects (age range = 21-29 years), during eupneic ventilator controlled breathing with a FiCO₂ of 0% (VC condition) and after inducing air hunger by increasing FiCO₂ at a fixed level of ventilator controlled ventilation (VC-CO₂ condition). Results: Air hunger was intense in the VC-CO₂ condition (VAS rating = 6.3 ± 0.6 cm, mean \pm SD, $p < 0.05$ vs. VC). Concomitantly, the amplitude of the N2P2 component of the LEPs was reduced in comparison to the VC condition ($-22,6\% \pm 17,8\%$, $p < 0,05$). Discussion: Although seemingly to a lesser extent than work/effort dyspnea, air hunger does inhibit LEPs. This contrasts with the lack of inhibition of the spinal nociceptive reflex in response to air hunger, a difference that could be in line with the central components of LEPs and the interaction between pain and air hunger at the cortical level. Air hunger may have some nociceptive characteristics, which could potentially open novel therapeutic avenues acting on central mechanisms.