European Respiratory Society
Annual Congress 2013

Abstract Number: 1283

Publication Number: P3572

Abstract Group: 1.2. Rehabilitation and Chronic Care

Keyword 1: COPD - exacerbations **Keyword 2:** COPD - management **Keyword 3:** Rehabilitation

Title: Neuromuscular magnetic stimulation of the quadriceps muscle after COPD exacerbations

Dr. Victor 11767 Bustamante vipobusta@hotmail.com MD [1,2], Mrs. Elena 11768 López de Santamaría ELENA.LOPEZDESANTAMARIAMIRO@osakidetza.net [3], Dr. Nuria 11769 Marina NURIA.MARINAMALANDA@osakidetza.net [3], Dr. Amaia 11801 Gorostiza AMAYA.GOROSTIZAMANTEROLA@osakidetza.net [4], Ms. Zuriñe 11770 Fernández pruebas.funcionalescruces@osakidetza.net [3,5] and Dr. Juan 11771 Gáldiz JUANBAUTIST.GALDIZITURRI@osakidetza.net MD [3,2,5]. [1] Pneumology, Hospital Universitario Basurto, Bilbao, Bizkaia, Spain, 48013 ; [2] Medicina, Euskal Herriko Unibertsitatea-UPV Facultad De Medicina y Odontología, Bilbao, Bizkaia, Spain, 48013 ; [3] Pneumology, Hospital Universitario Cruces, Barakaldo, Bizkaia, Spain, 48903 ; [4] Pulmonary Rehabilitation, Hospital Universitario Cruces, Barakaldo, Bizkaia, Spain, 48903 and [5] CIBERES, Instituto De Salud Carlos III, Gerencia Ciberes. Bunyola, Mallorca, Illes Balears, Spain, 07110 .

Body: Objective: To demonstrate the efficacy of a neuromuscular magnetic stimulation (NMMS) rehabilitation treatment after hospital admission because of COPD exacerbation. Patients and methods: Prospective, randomized, double blind, sham training controlled clinical trial (Clinicaltrials NCT01264978). 35 COPD patients were included during hospitalization for COPD exacerbation. Treatment began less than 7 days after hospital discharge, either with sham or increasing intensity bilateral 15 minutes NMMS–training sessions, 3 times/week, during 8 weeks. A Medtronic Magpro electromagnet and several refrigerated 60 mm circular stimulation coils were employed (Bustamante et al. Respir Med. 2010;104:237-45). Baseline and follow-up evaluations at 4, 8 and 12 weeks included: quadriceps supramaximal Twitch (Magstim 200, after Polkey, Muscle Nerve 1996;19: 549-55), maximal voluntary contraction of the quadriceps; 6MWT, CRQ, SF36, BODE and physical activity (accelerometers). Patient characteristics at baseline were: age 69 ± 8.5, 6/29 female/male, BODE 3.91 (2,2), 6MWT: 321,25m ± 131, FEV1 43,9% ± 14.7, SaO2 95% ± 1.45.

Change in parameters

	NMMS (4w)	NMMS (12w)	Controls (4w)	Controls (12w)
6MWD (m)	+45.8*	+26.9	+25.5	+32.2 *
Q Twitch (kg)	+2.77 **	+0.6	+1.37	+2.06*
MVC (kg)	+4.66**	+6.81**	+4.79**	+9.02*
SF36 physical	+15.78*	+14.25*	+5.72	-0.35

CRQ dyspnea	+0.92*	+0.84*	+0.21	+0.47*
CRQ Fatigue	+1.24*	+0.89*	+1.13*	+0.86
CRQ emotional	+0.23	+0.07	+1.14**	+1.47**
CRQ Disease control	+0.62	0	+1.07*	+1.27*

*:p< 0.05; ** : p<0.005

Conclusions: Our data show that NMMS can be a safe means to achieve a faster improvement in muscle function, exercise performance and quality of life in COPD patients recovering after an exacerbation.