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Title: Effects of long term home NIV on lung inflammation in stable COPD

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Body: Background. COPD is the most frequent indication for home NIV. Despite this, while NIV role in COPD exacerbations is well established, its effectiveness in patients with stable disease is under debate. No studies have evaluated the lung inflammatory response during home NIV in stable COPD. Aims and objectives. We evaluated pulmonary inflammation during long-term home NIV in stable COPD. We also analyzed the hospitalization and mortality rate during a two years follow up period. Methods. A prospective observational study was conducted on a group of consecutive unselected patients treated with home NIV (n= 68) and on a control group of individuals undergoing long term oxygen-therapy (n=75). All participants underwent pulmonary function tests (PFTs), arterial blood gas analysis (ABG), and sputum samples collection for IL-6, TNF-α, IL-10 and Human Neutrophil Peptides (HNP) levels determination. Participants entered the follow up in which, at three months intervals, PFTs, ABG, hospital admission and survival rate were recorded. Results. Study and control group were similar in age, gender, PFTs and ABG parameters. Sputum levels of IL-6 (41.4±27 vs 36.3±17.6 pg/ml; p=0.4), TNF-α (68.4±50.9 vs 59.7±46.9 pg/ml; p=0.5), IL-10 (11.3±10 vs 14.3±10 pg/ml; p=0.3) and HNP (34.3±5.9 vs 34.3±3.7 µg/ml; p=0.9) did not show significant differences between the two subsets of individuals. A significant reduction was observed in hospital admission in patients undergoing home NIV during the follow up (3,42 ± 3 vs 1,3 ± 1,6; p=0,0001). Conclusions. Our study, confirms previous reports on the effect of NIV in reducing exacerbation numbers in COPD patients and shows that long-term home NIV may not affect lung inflammatory response.