

# European Respiratory Society Annual Congress 2012

**Abstract Number:** 216

**Publication Number:** P3190

**Abstract Group:** 4.2. Sleep and Control of Breathing

**Keyword 1:** COPD - mechanism **Keyword 2:** Sleep disorders **Keyword 3:** Inflammation

**Title:** Inflammatory processes and effects of continuous positive airway pressure (CPAP) in overlap syndrome

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**Body:** Aim: We aimed to compare serum levels of the inflammatory mediators of C-Reactive Protein (CRP), Tumor Necrosis Factor- $\alpha$  (TNF- $\alpha$ ) and Asymmetric-Dimethyl-Arginine (ADMA) in Chronic Obstructive Pulmonary Disease (COPD), Obstructive Sleep Apnea Syndrome (OSAS) and their coexistence called Overlap Syndrome (OVS). Also, we planned to investigate the changes of these mediators with the treatment of continuous positive airway pressure (CPAP) in OSAS and OVS patients. Methods: CRP, TNF- $\alpha$ , ADMA levels were analyzed by ELISA method with the blood samples taken from patients with COPD (N=25), OVS (N=25) and moderate-severe stage OSAS (N=25) in the morning after polysomnography application and second blood samples taken from OSAS and OVS patients who underwent regular CPAP treatment throughout 3-6 weeks. Results: In comparison of three groups prior to CPAP treatment, ADMA levels in OSAS group were significantly lower than in COPD group ( $p=0.009$ ), but CRP ( $p=0.478$ ) and TNF- $\alpha$  ( $p=0.137$ ) were similar among groups. On the basis of before-after CPAP treatment comparison, CRP levels in both OSAS and OVS groups decreased significantly ( $p=0.02$ ,  $p=0.04$ ), whereas TNF- $\alpha$  ( $p=0.980$ ,  $p=0.144$ ) and ADMA ( $p=0.321$ ,  $p=0.282$ ) levels did not display any statistical significant differences. Conclusion: In OVS group, no significant difference was established in inflammatory mediators when compared to COPD and OSAS groups. After effective CPAP treatment, decrease in serum-CRP level in OVS and OSAS groups showed that CPAP is an effective treatment method for systemic inflammation. Nevertheless, further investigations examining the differences in ADMA, CRP and TNF- $\alpha$  level in patients with COPD, OSAS and OVS are required.