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Association of Hypoxia-Inducible Factor-1α in Patients with Chronic Obstructive Pulmonary Diseases

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Abstract : Background: In Chronic Obstructive Pulmonary diseases (COPD) pathogenesis oxidative stress plays an important role. Hypoxia-Inducible factor (HIF-1α) is a dimeric protein complex which Functions as a master transcriptional regulator of the adaptive response to hypoxiaand is a risk factor that increases when oxidative stress triggers. The role ofHIF-1αin COPD due to smoking is lacking. Aim: This study aims to evaluate the role of HIF-1α in smoker COPD patients comparing its association with diseases severity. Method: In this cross-sectional study, we recruited 87 subjects, 57 were smokers with COPD,15 were smokers without COPD and other 15 were non-smoker healthy controls. The mean age was 54.6± 9.32 (cases 57.08±8.15; controls 50.0± 9.8). There were 62%smokers, 25% non-smokers,7% tobacco chewers and 6% ex-smokers. Enzyme-linked immune sorbent assay (ELISA) method was used for analyzing serum samples wherein HIF-1α was analyzed by Sandwich-ELISA. Results: In smoker COPD patients, a significantly higher HIF-1α level showed positive association with hypoxia, smoking status and severity of disease (p=0.03). The mean value of HIF-1α was not significantly different in smokers without COPD and healthy controls. Conclusion: It is found that HIF-1α level was increased in smoker COPD, but not in smokers without COPD. This suggests that development of COPD drive the HIF-1α pathway and it correlates with the severity of diseases.

Keywords : COPD, chronic obstructive pulmonary diseases, smokers, nonsmokers, hypoxia
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