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Proinflammatory Cytokines and Bone Turn Over Markers in COPD Patients with Femur and Lumbar Osteoporosis

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Abstract : Osteoporosis is one of the systemic effects associated with chronic obstructive pulmonary disease (COPD). The etiology of osteoporosis in COPD is probably complex and various factors may contribute to its pathogenesis. Some of these are the consequences of chronic inflammatory lung disease. This study aims to investigate the cytokine levels and bone turnover markers in COPD patients complicated by osteoporosis. This study was conducted on 70 patients with severe COPD, according to the Global Initiative for Chronic Obstructive Lung Disease (GOLD) criteria. Blood pro-inflammatory cytokines (TNF-α, IL-6, IL-17, IL-1B and CTX, RANKL, and OPG) were analyzed by ELISA. The Brinkman Index, duration of COPD, FEV1/FVC ratio, and FEV1 values were not significantly different between osteoporosis and non-osteoporosis patients in COPD groups ($P > 0.05$). The level of femur and lumbal BMD were significantly decreased in the COPD + OP group compared to the COPD group ($P < 0.05$). The levels of TNF-α, IL-6, and IL-17 were significantly greater in COPD + OP patients than in COPD patients. CTX levels were significantly increased in the COPD + OP group compared to the COPD group ($P < 0.05$). The levels of RANKL and OPG were not significantly different between groups ($P > 0.05$). In conclusion, our study suggested that the increased pro-inflammatory cytokines induce bone resorption in osteoporosis due to COPD.
Keywords: bone, cytokine, bone turnover markers, bone loss; pulmonary.

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