Low Vitamin D Level Is Associated With Decreased Vital Capacity Of Lung

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Rationale : The vitamin D axis has been implicated in the pathogenesis of respiratory diseases. Many studies suggest the role of vitamin D in respiratory diseases. However, previous studies that evaluated the association between serum vitamin D level and lung function reported conflicting results and the effect of 25-Hydroxyvitamin D (25(OH)D) on pulmonary function has not been extensively studied. The aim of the present study is to investigate the correlation between serum vitamin D concentration and lung function.

Methods : This study was based on the data from Forth Korean National Health and Nutrition Examination Survey (KNHANES IV), a nationwide epidemiologic survey that was conducted from 2007 to 2009. Spirometry was performed and a trained interviewer administered a questionnaire on demographic data, current smoking status, daily food intake, the frequency of intake of vitamin or minerals supplements and the number of times a range of common physical activities. Serum 25(OH)D concentration was measured by RIA method. The analysis included 2205 subjects who were older than 40 years and performed pulmonary function test adequately by ATS/ERS criteria and measured serum 25(OH)D concentration.

Results : Mean age was 56 years, and 933 were male (42.3%) and 1272 were female(57.7%). 40% of participants were current or past smoker. Serum vitamin D concentrations were correlated with FEV_1 and FVC. Forced expiratory volume in 1 second (FEV_1) and forced vital capacity (FVC) were associated with increasing serum concentrations of 25(OH)D after adjustment with age, gender, smoking status, height, daily energy intake, occupations. But FEV_1/FVC ratio was not significantly associated with serum 25(OH)D level.

Conclusions : The results suggest that low vitamin D level is associated with decreased vital capacity of the lung and it is not related with airflow obstruction.

This abstract is funded by: This study was supported by a grant of the Korea Healthcare Technology R&D Project, Ministry for Health and Welfare, Republic of Korea. (A102065).

Am J Respir Crit Care Med 185;2012:A6496

Internet address: www.atsjournals.org

Online Abstracts Issue