Pulmonary function, exhaled nitric oxide and symptoms in asthma patients with obesity

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Abstract

The association of inhaled corticosteroids (ICS) and pneumonia in patients with chronic obstructive pulmonary disease (COPD) is still controversial. COPD cases with history of acute exacerbation (AE) were identified (COPD cohort). Time-dependent Cox regression analysis was applied to investigate the risk factors for pneumonia with COPD severity controlled by surrogate variables. Among the COPD cohort, those who continuously used ICS for more than 360 days without interruption were selected (ICS cohort). The incidence rate of pneumonia during ICS use was compared with those before ICS use and after ICS discontinuation by using pair t test. A total of 6034 and 842 cases were identified as the COPD and ICS cohorts, respectively. In the COPD cohort, recent ICS use was independently associated with pneumonia (hazard ratio: 1.06 [1.02–1.11] for per 80 mg of budesonide). Other independent risk factors included age, male, diabetes mellitus, malignancy, low income, baseline pneumonia event, and recent use of oral corticosteroids and aminophylline. In the ICS cohort, while AE rate gradually decreased, the incidence rate of pneumonia significantly increased after ICS use (from 0.10 to 0.21 event/person-year, P=0.001). This study demonstrates the association between ICS use and pneumonia in patients with COPD and history of AE. ICS should be judiciously used in indicated COPD patients. Combination therapy with inhaled corticosteroids (ICS)/long-acting β2 agonists (LABA) is a cornerstone in the treatment of chronic obstructive pulmonary disease (COPD), which is characterized by both airway and systemic inflammation.1 Two recent large clinical trials have demonstrated that ICS plus LABA can improve lung function and health status, and possibly reduce the frequency of acute exacerbation (AE) and mortality. Long-term ICS therapy, however, is reported to increase the risk of pneumonia among COPD patients. A recent meta-analysis reports an odds ratio (OR) of 1.78 (95% confidence interval [CI]: 1.50–2.12) and 1.62 (95% CI: 1.00–2.62) for fluticasone and budesonide, respectively. Another meta-analysis using individual patient data from 7 clinical trials has a different conclusion and that budesonide is not associated with increased risk of pneumonia. The discrepancy may be due to differences in study designs and definitions of pneumonia among individual clinical trial. Moreover, pneumonia is simply an adverse event rather than the primary endpoint in these trials. Thus, a large cohort study with specific focus may be more suitable than currently available meta-analyses to understand the impact of ICS on the risk of pneumonia among COPD patients. Recent cohort studies using health insurance claims data have shown an association between ICS use and increased risk of pneumonia. However, due to the built-in shortness of the symptoms and lung function results, none of these studies can control the confounding effect of COPD severity. This may have serious implications since COPD patients who require ICS therapy are usually those with severely impaired lung function and an increased risk of respiratory tract infection.

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