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News & Comments

Doxofylline with Budesonide: An agent to treat bronchial asthma

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Bronchial asthma (also known as asthma) is a common type of chronic respiratory disease with a high incidence and recurrence rate. It has now become one of the world's most pressing public health issues. It affects people of all ages and has a protracted duration, with severe clinical signs such as long-term coughing, wheezing, and chest tightness. It can easily induce chronic obstructive pulmonary emphysema if not controlled adequately, harming patients' physical and mental health and quality of life, as well as posing substantial problems to the stability of social public health. Inhaled bronchodilators and glucocorticoids are currently the most commonly used therapeutic interventions. Long-term usage of these medications, on the other hand, might result in side effects such as impaired immune function and osteoporosis.

Bronchial asthma is a chronic and persistent inflammatory illness of the airway caused by a combination of structural cells (such as airway epithelial cells and fibroblasts), effector cells (including eosinophil's, neutrophils, mast cells, T lymphocytes, and other immune cells), and cytokines. The effect of doxofylline (a commonly used bronchodilator) combined with budesonide (a commonly used clinical glucocorticoid) on the pulmonary function of patients with bronchial asthma was evaluated in this study, which looked at changes in the levels of Th1, Th2, and Th17 cells in the peripheral blood of 120 bronchial asthma patients.

The study included 120 individuals with bronchial asthma who were treated in the hospital between July 2018 and February 2019. Patients were over the age of eighteen. The patient with chronic persistent and clinical remission bronchial asthma, uncontrolled or partially controlled, and >2 asthma episodes in the previous year were chosen. Also, those with allergen were confirmed by allergen-specific IgE antibody screening. All patients were provided regular therapies after admission, such as assisting expectoration, easing cough, anti-inflammation, and prohibiting smoking, and those with bacterial infections were given suitable medications. In the meantime, patients in the control group were given budesonide inhalation suspension. All of the patients were given treatment for three months in a row.

As a frequent medication for the clinical treatment of asthma, budesonide affects glucocorticoid receptors. It can restrict the exudation of inflammatory cells and the production of cytokines by regulating the transcription of target genes in airway cells. Furthermore, aerosol inhalation allows the medicine to have a direct effect on the respiratory system and to work quickly. It also has the benefits of low dosage, a quick onset, and safety. Wheezing, coughing, shortness of breath and rales in the

lungs are all common symptoms of bronchial asthma. The time it took for wheeze, cough, shortness of breath, and pulmonary wheezing sound to subside in the experimental group was considerably shorter than in the control group after treatment.

Based on the results of the foregoing analysis, peripheral blood samples were used in this investigation to observe changes in the numbers of Th1, Th2, and Th17 cells in the patient's peripheral blood, which were easier to acquire than induced sputum and bronchial biopsy. The experimental group showed a more significant increase in Th1 cells and Th1/Th2, a more obvious decrease in Th2 and Th17 cells in the peripheral blood, a more obvious elevation in the serum level of IFN-, and more prominent declines in the levels of IL-4 and IL-17 following treatment than the control group. These findings revealed that doxofylline in combination with budesonide can help patients with inflammatory responses and immune system imbalances.

In conclusion, doxofylline in combination with budesonide in the treatment of bronchial asthma improves the balance of Th1/h2 in patients' peripheral blood, lowers the number of Th17 cells, and improves pulmonary function with few side effects.

JOURNAL REFERENCE

Wang, L., W. Yao, H. Wang, N. Xu and M. Chen, 2022. Doxofylline combined with budesonide exert obvious therapeutic effects on patients with bronchial asthma. Int. J. Pharmacol., 18: 221-227

KEYWORDS

Bronchial asthma, Doxofylline, Budesonide, clinical treatment of asthma, balance of Th1/h2, pulmonary functions