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# Montelukast Doesn’t Decrease the Risk of Cardiovascular Disease in Asthma Patients in Taiwan

**Authors :** Sheng Yu Chen, Shi-Heng Wang

**Abstract :** Aim: Based on human, animal experiments, and genetic studies, cysteinyl leukotrienes, LTC4, LTD4, and LTE4, are inflammatory substances that are metabolized by 5-lipooxygenase from arachidonic acid, and these substances trigger asthma. In addition, the synthetic pathway of cysteinyl leukotriene is relevant to the increase in cardiovascular diseases such as myocardial ischemia and stroke. Given the situation, we aim to investigate whether cysteinyl leukotrienes receptor antagonist (LTRA), montelukast which cures those who have asthma has potential protective effects on cardiovascular diseases. Method: We conducted a cohort study, and enrolled participants which are newly diagnosed with asthma (ICD-9 CM code 493. X) between 2002 to 2011. The data source is from Taiwan National Health Insurance Research Database Patients with a previous history of myocardial infarction or ischemic stroke were excluded. Among the remaining participants, every montelukast user was matched with two randomly non-users by sex, and age. The incident cardiovascular diseases, including myocardial infarction and ischemic stroke, were regarded as outcomes. We followed the participants until outcomes come first or the end of the following period. To explore the protective effect of montelukast on the risk of cardiovascular disease, we use multivariable Cox regression to estimate the hazard ratio with adjustment for potential confounding factors. Result: There are 55876 newly diagnosed asthma patients who had at least one claim of inpatient admission or at least three claims of outpatient records. We enrolled 5350 montelukast users and 10700 non-users in this cohort study. The following mean (±SD) time of the Montelukast group is 5 (±2.19 )years, and the non-users group is 6.2 5.47 (± 2.641) years. By using multivariable Cox regression, our analysis indicated that the risk of incident cardiovascular diseases between montelukast users (n=43, 0.8%) and non-users (n=111, 1.04%) is approximately equal. [adjusted hazard ratio 0.992; P-value:0.9643] Conclusion: In this population-based study, we found that the use of montelukast is not associated with a decrease in incident MI or IS.

**Keywords :** asthma, inflammation, montelukast, insurance research database, cardiovascular diseases
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