MONTELUKAST INDUCES BETTER CONTROL OF SYMPTOMS AND MANAGEMENT OF LUNG FUNCTION, AND DECREASED INFLAMMATION IN WOMEN COMPARED WITH MEN

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Introduction: Sex differences exist in the prevalence of asthma and allergic diseases, partially due to the effects of sex hormones on the development of allergic manifestations. Women are more prone to suffer allergic asthma, experience difficulties in controlling asthma symptoms, and show adverse responses to drugs. In particular, women tend to respond better to anti-leukotriene (LT) drugs than men, partially due to sex differences in endogenous LTs biosynthesis. However, the effects of anti-LT drugs on lung function, symptoms, and pulmonary and systemic inflammation in adult asthmatic women vs. men are unknown. The goal of this study was to characterize the effects of an anti-LT drug, montelukast (MS), in a randomized case-control pilot study of asthmatic adult females and males.

Materials and methods: Fortyone age- and sex-matched asthmatic subjects were randomly assigned to low-dose of inhaled corticosteroids (ICS) in combination with Montelukast (n=21of which 11females and 10 males), or low-dose ICS in combination with long-acting beta-agonists (LABA, n=20 of which 10 females and 10 males). The optimal control of the symptoms was achieved in both groups according to the Global Initiative for Asthma (GINA) guidelines. At enrollment, and after 13weeks from the beginning of the therapy, pulmonary function tests and asthma control tests (ACT) were performed, and the fraction of exhaled nitric oxide (FeNO) and blood eosinophils levels were measured.

Results: Female subjects treated with ICS+MS had better control of the asthmatic symptoms (defined as higher ACT score, $P<0.001$) and improved pulmonary function (with higher forced expiratory volume in 1second [FEV_1, $P<0.05$], forced vital capacity [FVC, $P<0.05$], compared with males in the same treatment group. Interestingly, ICS+MS-treated females had significantly lower levels of eosinophils ($P<0.01$), and FeNO ($P<0.01$) compared with males in the same treatment group. No differences between females and males treated with ICS + LABA were observed in any of these parameteres evaluated.

Discussion and conclusion: MS treatment in women leads to better control of symptoms, better management of lung function, and decreased inflammation levels compared with MS treatment in men. These findings, if confirmed in larger cohorts, might be a step forward towards a gender-tailored approach to therapy with anti-LT drugs in asthma.