THE ROLE OF INFECTIONS IN PEDIATRIC ASTHMA

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Infections are the main driver of asthma symptoms in children. Respiratory tract infections predominantly with rhinovirus account for up to 85% of asthma exacerbations in school children as well as exacerbations in toddlers, and result in frequent outpatient visits or hospitalizations. Seasonal patterns of upper respiratory viral infection correlate with hospital admissions associated with asthma especially in children.

Asthma-like symptoms in children comprise a spectrum of disorders from the persistent to the intermittent, from the chronic to the self-limiting and from the atopic driven to the viral driven disease. The atopic component plays an increasing role in older children, while virus is dominant in young children.

Montelukast was recently studied in two clinical trials in asthmatic children of 2-5 years of age. In a multi-centre study of 689 young children with chronic asthma, montelukast 4 mg chewable tablet caused clinically important improvements in the control of asthma including reduced number of exacerbations, which are primarily viral driven. In a single-center study montelukast provided clinically significant bronchoprotection in a similar group of young asthmatic children.

We recently reported on the effect of montelukast in a group of young pre-school children with a history of episodic asthma with exacerbations in associated with respiratory infections and minimal symptoms between episodes. The study was a 12-month multi-center, double-blind, parallel-group study which showed montelukast to reduce exacerbation rate by 32%.

Post-bronchiolitis symptoms represent the end of the spectrum primarily caused by viral infection. This is one defined subgroup who suffers from recurrent symptoms for months and years after a severe viral bronchiolitis. Such viral bronchiolitis often causes a vicious circle of reactive airways disease further exacerbated during subsequent viral infections. The symptoms appear indistinguishable from asthma. Cysteinyl-leukotrienes are released during RSV-bronchiolitis, and can cause many of the features of the inflammation. We recently investigated a group of infants with RSV-bronchiolitis with no asthma history. Montelukast was given for 4 weeks after discharge and provided a clinically relevant improvement of symptoms. The effect was primarily driven by the younger infants. The study was exploratory in nature and a definitive study is required. Still, this may serve as a model of viral induced reactive airways disease and encourage further studies of such novel treatment strategy to treat viral induced cough and wheeze.

These observed effects suggest the role of leukotriene receptor antagonist treatment may expand beyond asthma management and opens the perspectives of control of viral induced recurrent cough and wheeze in asthmatics as well as non-asthmatics.