Pulmonary function changes in allergic rhinitis with or without bronchial asthma.

Thesis

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Abstract:

Inflammatory processes affecting nasal and bronchial mucosa are similar in nature. Flares of allergic rhinitis may precipitate additional asthma attacks and aggravate the underlying asthma symptoms. Allergic rhinitis is regarded as a risk factor for the development of asthma, especially in the presence of bronchial hyperresponsiveness.

Patients with underlying allergic rhinitis are three times more likely to develop asthma when compared with normal subjects. The presence of bronchial inflammation in non-asthmatic patients with seasonal allergic rhinitis is well established.

We therefore conducted a study on 60 children to examine whether those with allergic rhinitis without known underlying asthma have impaired spirometry. We compared them with those having allergic rhinitis and asthma, also with others having asthma only. The effect of treatment on spirometric parameters was shown after 3 months.

Key words:

Allergic rhinitis, Bronchial asthma, Pulmonary functions, Bronchial hyper responsiveness, Spirometric abnormalities.

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List of abbreviations

AQ	Aqueous
AR	Allergic rhinitis
ARIA	Allergic rhinitis and its impact on asthma
BHR	Bronchial hyperresponsiveness
CNS	Central nervous system
COPD	Chronic obstructive pulmonary disease
CT	Computerized tomograghy
CXR	Chest x-ray
CysLT	Cysteinyl leukotriene
ECG	Electro cardio gram
ENT	Ear nose and throat
FDA	Food and drug administration
FEF_{25-75}	Forced expirarory flow at 25-75% of vital capacity
FEV_1	Forced expiratory volume in first second
FVC	Forced vital capacity
GI	Gastro intestinal

GINA	Global initiative for asthma
HFA	Hydrofluoroalkane
HRCT	High resolution computed tomograghy
ICs	Inhaled corticosteroids
IgE	Immunoglobulin E
IL	Interleukin
INF	Interferon
LABA	Long acting beta 2 agonists
LLN	Lower limit of normal
LO	**Lipooxygenase**
MMEF	Maximal mid expiratory flow
MRI	Magnetic resonance imaging
MVV	Maximum voluntary ventilation
NARES	**Non allergic rhinitis with eosinophilia**
NHLBI	National heart, lung and blood institute
OTC	Over the counter
PAR	Perennial allergic rhinitis

PEF	Peak expiratory flow
PFTs	Pulmonary function tests
RAST	Radio allegro sorbent testing
SAR	Seasonal allergic rhinitis
SPT	Skin prick testing
SR	Sustained release
Th2	T helper 2 lymphocytes
TNF	Tumor necrosis factor
UMHS	University of Medicine & Health Sciences
URTIs	Upper respiratory tract infections
US	Unites states
VEGF	Vascular endothelial growth factor
WHO	World health organization

INTRODUCTION

Inflammatory processes affecting nasal and bronchial mucosa are similar in nature **(Kessel et al, 2008)**. Flares of allergic rhinitis may precipitate additional asthma attacks and aggravate the underlying asthma symptoms **(Guerra et al., 2002)**. Allergic rhinitis is regarded as a risk factor for the development of asthma, especially in the presence of bronchial hyperresponsiveness (BHR) **(Van Bever et al, 2002).**

Patients with underlying allergic rhinitis are three times more likely to develop asthma when compared with normal subjects **(Guerra et al, 2002)** .Children who develop rhinitis within the first year of life are twice more likely to develop asthma than children who develop rhinitis later in life (**Settipane et al,1994)**. The presence of bronchial inflammation in non-asthmatic patients with seasonal allergic rhinitis is well established **(Kelly et al, 2003).**

The majority of patients with asthma present with seasonal or perennial allergic symptoms and up to 40% of patients with allergic rhinitis also have asthma **(Settipane et al, 1994)**. The impact of concomitant allergic rhinitis and asthma on the quality of life is noteworthy. Such patients frequently complain of sleep disturbances (79% of children and adults), avoid participation in leisure activities and sports (75% of children and adults), and report poor concentration in school (73% of children) and disruptions in their social engagements (51% of children) **(Pawanker, 2004)**.

Aim of work:

The aim of this work is to study any abnormality in pulmonary function tests in patients with allergic rhinitis, and to compare between pulmonary function changes before and after treatment in **a)** allergic rhinitis alone, **b)** allergic rhinitis associated with bronchial asthma and **c)** bronchial asthma alone.