



## PREVALENCE OF CHRONIC RHINOSINUSITIS, OBESITY, GASTROESOPHAGEAL REFLUX DISEASE AND NON-STEROIDAL ANTI-INFLAMMATORY DRUGS AS COMORBIDITIES IN PATIENT WITH DIFFICULT TO TREAT AND SEVERE ASTHMA IN BAGHDAD AND DIYALA GOVERNORATE IN IRAQ

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### ABSTRACT

**Objective:-** the aim of the study is to evaluate the role of chronic rhinosinusitis(CRS) , obesity, gastroesophageal reflex disease(GERD) and non-steroidal anti-inflammatory drugs (NSAIDs) as comorbidities in difficult to treat and sever Asthma in Baghdad and Diyala Governorate. **Materials and Methods:-** The study had include 163 patient 73 male and 90 femal, complaining of difficult to treat and sever asthma attending private clinics (Dr. Adnan H. Alwan , Dr. Talib A. Humood and Dr. Adnan R. Muhammed) from 2/1/2018 to 31/1/2018 history, clinical examination, length and weight were done for them. **Results:-** CRS was found as the most common comorbidity for difficult to treat and sever asthma (72 patient, 44.17%). Followed by obesity (40 patient, 24.53%) and last one is NSAIDs (10 patient, 6.13%). **Conclusion:-** The study and other similar studies were showing that CRS, Obesity, GERD and NSAIDs are playing role as comorbidities in difficult to treat and sever asthma.

**KEYWORDS:** Asthma, Rhinosinusitis, Obesity, Gastroesophageal reflex disease and Non steroidal anti inflammatory drugs.

### INTRODUCTION

#### Difficult to treat asthma

It is asthma that is uncontrolled despite GINA (global initiative of asthma management) step 4 or 5 treatment e.g high dose inhaled corticosteroid (ICS) with asecond cont-roller maintenance oral corticosteroid (OCS).<sup>[1]</sup>

#### Sever asthma

It is subset of difficult to treat asthma which means asthma that is uncontrolled despite adherence with maximal optimized therapy and treatment of contributory factors or that worsens when high dose treatment is decreased.<sup>[1]</sup>

Medication side effects are particularly common and problematic with OCS.<sup>[2]</sup> Adverse effects of long term OCS include obesity, diabetes, osteoporosis, cataracts, hypertension, adrenal suppression.<sup>[3]</sup>

#### Chronic rhinosinusitis (CRS)

Chronic rhinosinusitis is acommon disorder characterized by inflammation of the mucosal membranes of the nose and paranasal sinnses.<sup>[4,5]</sup> Patient with CRS are typically classified into CRS with nasal

polyps (CRSwNP) and CRS without nasal polyps (CRSsNP).<sup>[5,6]</sup>

#### Obesity

Obese patient with sever asthma report more asthma symptoms and lower lung function, and tend to have more asthma exacerbations as well as higher use of oral steroids.<sup>[7,8,9]</sup> The mechanism linking obesity to asthma severihy are unclear, but may include physiological factors such as airway closure and lung restriction but also underling immunological factors as well as dietary factors.<sup>[10]</sup> Obesity is afeature of late-onest non-eosinophilic asthma.<sup>[11]</sup>

#### Gastroesophageal reflex disease (GERD)

Individual with sever asthma comorbidities are common with the most prevalent being GERD, sinusitis, allergic rhinitis and nasal polyp. All of these can lead to worsening of the asthma symptoms.<sup>[12]</sup>

Individual with asthma often present with GERD, which has been shown to exacerbate asthma through mechanism involving vagal nerve stimulation (esophago bronchial reflex) or microaspiration of gastric contents into the upper airways.<sup>[13-15]</sup>

### Non-steroidal anti-inflammatory drugs (NSAIDs)

Aspirin – induced asthma (AIA) is clinical entity characterized by asthma and intolerance to aspirin or NSAIDs.<sup>[16]</sup> AIA and nasal polyp are associated with an increase in asthma severity.<sup>[16,17]</sup>

### MATERIALS AND METHODS

The study was conducted at private clinics of (Dr. Adnan H. Alwan, Dr. Talib A. Humood and Dr. Adnan R. Muhammed) the patients were diagnosed as difficult to treat and sever asthma. Full history, clinical examination and spirometry were done for all patients. Weight and hight were done for obese patients. Compulerized tomography (G.T) was done for patients with 'CRS. Osophageal gastro-duodenoscopy was done for patients with GERD. The patient who have well controlled asthma were excluded from the study.

Total patients included in the study are 163 (73 male and 90 female).

The study was performed during the period from 2/1/2018 to 31/12/2018.

### RESULTS

#### Age and sex distribution

The total number of the patients included in the study were 163 (73 male and 90 female), their age were between 5-70 year. The age and sex distribution of the patients is shown in table 1.

**Table 1: Age and sex distribution.**

Age (years)	Number	Percentage (%)	
5-10	m	4	2.45
	f	1	0.61
11-20	m	7	4.29
	f	4	2.45
21-30	m	10	6.13
	f	24	14.72
31-40	m	16	9.81
	f	20	12.26
41-50	m	14	8.58
	f	16	9.81
51-60	m	11	6.74
	f	16	9.81
>60	m	11	6.74
	f	9	5.52
Total		163	100.0

m = male, f = female

#### Disease distribution of the patients

In the study 163 patients are included all of them are asthmatic patients, 98 of them are difficult to treat asthma (60.12%) and 65 of them are sever asthma (39.87%) (table 2).

**Table 2: Disease distribution.**

Disease	Number	Percentage (%)
Difficult to treat asthma	98	60.12
Sever asthma	65	39.87
Total	163	100.0

#### Comorbidities

Regarding to comorbidities which are investigated in the study it was found that out of 163 patients included in the study are CRS which is the most common comorbidity factor affecting asthma control 72 patient (44.17%). The second comorbidity was obesity 40 patient (24.53). This is followed by GERD 20 patient (12.26%). The last one is NSAIDs 10 patient (6.13%).

In the study we found that some patient has more than one comorbidity factor 21 patient (12.88%). (Table 3). Among these patients 19 patients has CRS and GERD and among these 19 patients 7 patients are obese. Two patients were found with CRS and using and NSAIDs.

**Table 3: Comorbidities.**

Comorbidity	Number of patients	Percentage (%)
Chronic rhinosinusitis	72	44.17
Obesity	40	24.53
GERD	20	12.26
NSAID	10	6.13
More than one factor	21	12.88
Total	163	100.0

GERD = Gastroesophageal reflex disease

NSAID = Non steroidal anti inflammatory drugs

### DISCUSSION

In individuals with sever asthma comorbidities are common with most prevalent being GERD, sinusitis, allergic rhinitis and nasal polyposis. All of these can lead to worsening of the asthma symptoms.<sup>[12]</sup>

In our study we found that the first comorbidity affecting asthma is CRS 72 patient (44.17%), in addition to these patient there was 19 patient who have CRS and GERD, this mean that there is association between CRS, GERD and asthma. Same association was found in similar study before.<sup>[18]</sup>

One possible explanation for this association is sensitivity and reaction to common pollen and food allergens such as profilins and PR-10. IgE a higher degree of cross-reactivity compared with other types of immunoglobulines.<sup>[19]</sup>

Eosinophils, a key component of the pathophysiology of allergic inflammation and CRS,<sup>[20]</sup> are also found in esophageal mucosa in GERD.

Out of 163 patient included in the study GERD was found at 20 patient as one comorbidity in such patient, but it was also (GERD) found at 19 patients who has more than one comorbidity, this mean that 39 patient out of 163 patient are patient with GERD (23.92%) of total patients.

Individual with asthma often present with GERD, which has been shown to exacerbate asthma through mechanism involving vagal nerve stimulation (esophagobronchial reflex) or microaspiration of gastric contents into the upper airway.<sup>[13-15]</sup>

Although hypersensitivity to NSAIDs and aspirin affect 0.6-2.5% of general population of adults, it occurs, in 5-20% in adults with asthma.<sup>[21]</sup> In our study 6.13% of patients has NSAIDs as comorbidity causing their asthma exacerbation.

In similar study only 3.2% of the patients reported asthma exacerbation after the use of NSAIDs.<sup>[22]</sup>

Asthma and obesity are important public health problem.<sup>[23-25]</sup> In recent years investigations have begun to explore possibility that asthma is not single disease but phenotypes.<sup>[26]</sup> Thus obesity might be associated with different types of asthma such as one that is of greater severity or that is more difficult to control.

In our study obesity was found in 24.53% patients.

## CONCLUSIONS

- 1- In our study and similar studies it was found that CRS and GERD are the most common comorbidities affecting asthma control.
- 2- Obesity and NSAID are also comorbidities which affect asthma control.
- 3- There is association between these comorbidities.

## Recommendations

- 1- In patient with difficult to treat and severe asthma associated comorbidities should be investigated as they are the causes of respiratory symptoms and asthma severity or uncontrol.
- 2- More studies are needed in future.

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