

Original Article

Evaluation of Corticophobia in Asthmatic Patients

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ABSTRACT

Background: Inhaler corticosteroids (ICS) are the most commonly used antiinflammatory drugs in the treatment of asthma. Although systemic adverse effects are minimal, patients hesitate to use ICS for a long time because of corticophobia. There is no study evaluating corticophobia via Likert-type appendix among the asthmatic patients. **Aim:** In this study, it was aimed to evaluate the fears and beliefs about ICS in asthmatic patients. **Subjects and Methods:** Between December 2017 and January 2018, 150 stable asthmatic patients were included in the study. Demographic data (age, education, smoking history, etc.) and asthma-related data (pulmonary function test, drug use) were recorded. The appendix of TOPICOP study applied to the patients with asthma which was composed of 10 questions (five questions about fear of ICS and five questions about beliefs of ICS). **Results:** The rate of ICS maintain in stable asthmatic patients was found to be 66.6%. According to the survey results, 68% of the patients believed that ICS may lead to weight gain, 52% believed that ICS may lead to infection, 73% believed that ICS may pass into bloodstream, and 67.3% believed that ICS may damage the lungs. It was also found that 90.7% needed to be informed about ICS and 67.3% wanted to cut the ICS drug as soon as possible. **Conclusion:** We found that treatment adherence may increase, if physicians allocate more time to asthma patients to inform about ICS beneficial effects at the initiating of ICS treatment and control visits.

KEYWORDS: Asthma, corticophobia, inhaled corticosteroid, appendix, treatment

INTRODUCTION

Asthma is a heterogeneous disease characterized by chronic airway inflammation associated with airway hypersensitivity to direct or indirect stimuli.^[1] It is presented with respiratory symptoms such as wheeze, dyspnea, chest tightness, and/or cough. Asthma is very common in the world and is becoming increasingly widespread due to increased air pollution and allergen exposure.

Inhaler corticosteroids (ICS) are the most commonly used drugs in the treatment of asthma. Although systemic adverse effects seem very rarely, patients hesitate to use them. The fear of corticosteroid is called as “corticophobia.” Corticophobia reduces the adherence and increases treatment failure.^[2] Therefore, asthma

control gets more difficult and this causes to increase the cost of workforce loss and health care.

The previous studies about the prevalence of corticophobia and its effect on treatment adherence are very limited, and these studies were done in patients with atopic dermatitis. Corticophobia was evaluated with yes/no appendix.^[3,4] As a Likert-type appendix, there is only one study (TOPICOP study) that evaluates corticophobia in patients with allergic dermatitis.^[5] However, there is no study evaluating corticophobia with Likert-type appendix among the asthmatic patients.

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In the present study, the corticophobia appendix was revised and translated by using the TOPICOP study with joint consensus of experts. We aimed to evaluate both fears and beliefs about ICS in asthmatic patients prospectively.

SUBJECTS AND METHODS

Between December 2017 and February 2018, 150 patients with stable asthma diagnosis were included in the study. Prestudy local ethic decision was obtained from Istanbul Medeniyet University Goztepe Training and Research Hospital Clinical Researches Ethics Committee (date/protocol: 2017/0371).

The inclusion criteria were the patients who were older than 18 years of age, had previously been diagnosed with asthma according to the GINA guidelines by the pulmonologist, and had been in the stable period. Patients with acute asthma exacerbation and psychiatric diagnosis were excluded from the study. Informed consent was obtained from patients before appendix.

The appendix of TOPICOP study was revised and translated into Turkish by a public health specialist and 3 pulmonologists [Figure 1]. The appendix was formed from a total of 10 questions, which 5 questions about fears (worries) and 5 questions about beliefs on ICS. In the appendix, the answers of the questions were scored as do not agree, partially agree, and agree as 0, 1, and 2 points. Demographic data (age, gender, body mass index (BMI), education status, smoking history, comorbidities, etc.) and asthma-related data (respiratory function test, asthma course, asthma treatments) were recorded in the appendix [Table 1].

According to the results of the corticophobia appendix (total appendix score = 20 points), patients were divided into 2 groups as 10 points above (corticophobia group) and 10 points and less (noncorticophobia group). The appendix was divided into two subgroups: beliefs and worries.

Statistical analysis

The Kolmogorov–Smirnov test was used to test the distribution model of variables in statistical analyses. Chi-square test was used for categorical data and student-t test for numerical data. Parametric data are presented as mean \pm standard deviation (SD). Cronbach's α coefficient analysis was used to assess the consistency of the appendix. The internal consistency of this survey questions was found as significant [Cronbach's $\alpha = 0.89 (>0.70)$]. SPSS 22.0 program was used for statistical analysis. A *P* value of 0.05 was used as the cut-off value to determine statistical significance.

RESULTS

The study consisted of 150 stable asthma patients [34 males (22.6%), mean age = 47.2 ± 13.2 years]. The demographic and clinical characteristics of the study groups are shown in Table 1. The number of patients in corticophobia and noncorticophobia group was 79 (52.6%) and 71 (47.4%), respectively. The mean BMI was 27.5 ± 5.1 kg/m². According to education levels of the patients, it was seen that the primary school graduates were 46.7% and the high school and university graduates were found 39.3%. The mean duration of asthma was 13.0 ± 11.4 years [Table 1]. The most common comorbidities were found as seasonal allergic rhinitis (14%), diabetes mellitus (10%), and hypertension (8.0%) [Table 1]. Pulmonary function tests of patients were found as mean forced expiratory flow in one second (FEV1) 2.31 ± 0.61 (lt), mean FEV1/forced vital capacity (FVC) $81.0 \pm 8.9\%$, and mean forced expiratory flow (FEF) 25%–75% $66.4 \pm 26.2\%$ [Table 1]. The most frequently used drugs were found as ICS + long acting beta-2 agonist (LABA) and short acting beta-2 agonist (SABA) (52.6% and 33.3%, respectively). Demographic and clinical characteristics were found similar between corticophobia and noncorticophobia groups statistically [Table 1].

According to the survey results, 68% of the patients believed that ICS treatment may cause weight increase, 52% believed that ICS treatment may cause infection, 73% believed that ICS circulates in the blood, and 67.3% believed that ICS may damage lungs. In addition, it was found that 90.7% needed information about ICS and 67.3% wanted to stop ICS drug as soon as possible [Table 2].

DISCUSSION

In the present study, we showed that corticophobia is prevalent and it is mainly related with fear and negative belief in patient with asthma. Therefore, we think that preinformation about ICS benefits and side-effects is important before starting ICS treatment to asthma patients.

The prevalence of asthma is estimated to be around 4.3% in the world, but it varies between countries and increases year after year.^[6] While asthma is more common in boys among children, it is more common in women among adults. In this study, the ratio of female to male was found approximately 3/1. There was no significant difference in age, gender, BMI, and educational level between corticophobia and noncorticophobia group, suggesting that corticophobia is prevalent irrespective of physical and social background. Although FEV1/FVC tended to be higher in corticophobia group, suggesting

Table 1: Demographic and clinical parameters

Characteristics	Total Patients (n=150)	Corticophobia Group (n=79)	Noncorticophobia Group (n=71)	P
Gender (male/female)	34/116	16/63	18/53	0.55
Age (years) mean±SD	47.2±13.2	46.5±11.7	47.4±14.6	0.62
BMI (kg/m ²)	27.5±5.1	27.6±5.4	27.4±4.8	0.86
Education level, (n, %)				
Primary school	70 (47)	32 (40)	38 (54)	0.33
Middle School	21 (14)	15 (19)	6 (8)	0.10
High school	38 (25)	20 (25)	18 (25)	0.99
University	21 (14)	12 (15)	9 (13)	0.70
Asthma duration (years) mean±SD	8.2±6.1	7.6±4.8	10.5±7.4	0.63
Smoking history n,%	42 (28)	25 (32)	17 (24)	0.43
Comorbidities (n, %)				
Allergic Rhinitis	21 (14)	12 (15)	9 (13)	0.70
Hypertension	12 (8)	7 (9)	5 (7)	0.71
Diabetes Mellitus	15 (10)	8 (10)	7 (10)	0.96
Cardiovascular Diseases	4 (3)	2 (3)	2 (3)	0.91
Other (n, %)				
Glaucoma	6 (4)	3 (4)	3 (4)	0.89
Thyroid Disease	4 (3)	1 (1)	3 (4)	0.27
Pulmonary Function Tests Results				
FEV1 (lt)	2.31±0.61	2.34±0.52	2.29±0.71	0.82
FVC (lt)	2.85±0.63	2.77±0.54	2.95±0.80	0.43
FEV1/FVC (%)	81.0±8.9	83.7±7.3	77.5±10.4	0.05
FEF25-75 (%)	66.4±26.2	76.5±33.6	55.8±20.9	0.08
PEF (%)	72.0±18.4	76.9±19.0	64.7±16.3	0.08
Bronchodilator use (ongoing) (n)				
ICS	21 (14)	10 (13)	11 (15)	0.66
ICS+LABA	79 (53)	38 (48)	41 (58)	0.51
SABA	50 (33)	28 (35)	22 (31)	0.68
Montelukast	32 (21)	19 (24)	13 (18)	0.49

Abbreviations: BMI: Body Mass Index, SAMA: Short-acting muscarinic antagonists, ICS: Inhaled Corticosteroid, LABA: Long-acting beta antagonists, SABA: Short-acting beta antagonists, FEV1: Forced Expiratory Flow in 1 Second, FVC: Forced Vital Capacity, PEF: Peak Flow, forced expiratory flow (FEF) 25-75: FEV Between 25% and 75% of Vital Capacity.

Table 2: Patients survey data

BELIEFS:	I do not agree	Partially agree	I totally agree
ICS make you fat.	48 (32.0%)	22 (14.7%)	80 (53.3%)
ICS can lead to infections.	72 (48.0%)	62 (41.3%)	16 (10.7%)
ICS pass into the bloodstream.	41 (27.3%)	42 (28.0%)	67 (44.7%)
ICS damage your lung.	49 (32.7%)	48 (32.0%)	53 (35.3%)
ICS will affect my future health.	45 (30%)	38 (25.3%)	67 (44.7%)
FEARS:			
I need to be informed about medicines.	14 (9.3%)	16 (10.7%)	120 (80%)
I want to stop the medicine use as soon as possible.	49 (32.7%)	41 (27.3%)	60 (40%)
I'm afraid to use more drugs.	23 (15.3%)	36 (24.0%)	91 (60.7%)
I don't know any side effects of ICS, but I'm still afraid of ICS.	28 (18.7%)	23 (15.3%)	99 (66.0%)
I wait as long as I can before treating myself.	34 (22.7%)	34 (22.7%)	82 (54.6%)

Abbreviation: ICS: Inhaled Corticosteroid

that better pulmonary function may cause negative feeling to ICS [Table 1].

Since comorbidities make more difficult to control asthma, they must be taken into account and

treated. In the previous studies, comorbidities most commonly associated with asthma patients were upper respiratory tract infection, rhinitis, reflux, and hypertension.^[7,8] In this study, the most common comorbidities were rhinitis (14%), diabetes mellitus (10%), and hypertension (8%). Furthermore, we found that comorbidities are similar between corticophobia and noncorticophobia groups [Table 1].

It is recommended “stepwise treatment” to control of asthma.^[1] ICS + LABA (52.6%) treatment protocol was the most frequently used by the study population and the second was SABA (33.3%) [Table 1] in this study. The extensive use of ICS + LABA treatment has been observed, although it is normally recommended for use in the 3-4th step according to the Global Initiative for Asthma (GINA) 2019.^[9] In this respect, it can be concluded that the ICS + LABA combination therapy is used more than the recommended in the guideline in our study population.

Patients with asthma should be assessed for asthma control level, treatment adherence, inhalation technique, and comorbidities; FEV1 values should be recorded at the initiating of treatment and control visits^[1]. Nevertheless, there are many factors affecting treatment adherence in asthma patients. One of the most important factor that negatively affects treatment adherence is the corticophobia. Corticophobia means the fear of all corticosteroid (systemic or inhaler or topical) normally. Since the patients with stable asthma were included to study, only “inhaler” corticosteroids were considered as corticophobia in this study. Many factors can cause the corticophobia. For example, patients may be frightened by information they have heard from friends, relatives, doctors, pharmacists, and read on social media. These fears and beliefs are not always prejudiced and unfair, as it is known that corticosteroids have many side effects. For instance, it is known that corticosteroids are associated with circulate in the blood, increase in appetite, weight gain, predisposition of infection, and hoarseness of vocal cords.^[10] Although some of the patients did not know the side effects of ICS, they expressed worries and negative beliefs about ICS in the survey. This suggests that if not informed about medicines, it may also lead to fear and anxiety in patients with or without side effects.

The initial studies about corticophobia were performed in asthmatic patients about 30 years ago.^[11,12] Corticophobia ratios were found to be very wide range in these studies.^[11,12] In a systemic review study in patients with atopic dermatitis, topical corticosteroid phobia prevalence ranged from 21.0% to 83.7%.^[13] In the TOPICOP study, which was performed among parents

of children with allergic dermatitis, 80.7% of them stated that they worried about steroids.^[5] Two studies on asthmatic children showed that their parents had fear and some concerns about steroid side effects.^[14,15] In this study, 49.3% of adult asthmatic patients had corticophobia.

Fear of adverse effects and lack of knowledge about the steroid treatment are the most important reasons for not using ICS regularly.^[16] Consequently, it is thought that corticophobia adversely affects the adherence of asthma patients and that patients need to be informed in detail about corticosteroids. It is important to investigate the relationship between true adherence and corticophobia in the prospective studies with big-sample size. The relationship between corticophobia and the score of self-reporting appendix (such as ASK-20) for checking the adherence barriers to medicines also seems to be interesting for future investigation.^[17,18]

There are some limitations that have to be mentioned. First, this is a single-centre, cross-sectional study. The prevalence of women patients is three times more than men. Due to fears and beliefs are different between genders of women and men, alternative studies can be planned to evaluate women and men separately in a more extensive study population in the future.

In this study, the corticophobia level of adult asthma patients was measured via Likert-type appendix and it found high percent. Treatment adherence might be better if preinformation about ICS beneficial effects and side effects is given when initiating of ICS treatment and at the control visits for asthmatic patients.

Consent

All participants provided written informed consent.

Authors' contributions

HIY has contributed data collection and writing of the study; AK has contributed conception of the study, writing, revised, and corrected the acquired data; and all authors read and approved the final manuscript.

Clinical Importance

We found the corticophobia level of adult asthma patients is high percent and preinformation is important about ICS beneficial effects and side effects for asthmatic patients.

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Conflicts of interest

There are no conflicts of interest.

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APPENDIX OF CORTICOPHOBIA IN ASTHMA PATIENTS

Patient name: Age: Gender:Date:
Education (primary/middle/high school/university/doctor):
How many years do you have asthma? :
Drugs used:
Smoking:
Additional dis: *Contact number :

BELIEFS:	I do not agree (0)	Partially agree (1)	I totally agree (2)
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ICS make you fat.
ICS can lead to infections.
ICS pass into the bloodstream.
ICS damage your lung.
ICS will affect my future health.
Other (please state)

FEARS:	I do not agree (0)	Partially agree (1)	I totally agree (2)
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I need to be informed about ICS.
I want to stop the ICS use as soon as possible.
I'm afraid of using too much drugs.
I don't know of any side effects of ICS, but I'm still afraid of ICS.
I wait as long as I can before treating myself
Other (please state)

How many months did you use the treatment for asthma? Do you use regularly?

If you discontinued your asthma treatment, why?

Figure 1: Likert-type corticophobia appendix