Evaluation of Parents' Opinions About the Fear of Inhaler Corticosteroid Treatment in Child Patients Diagnosed with Asthma

Astım Tanısı Olan Çocuk Hastalarda Ebeveynlerinin Kortkiosteroid Tedavisi Hakkındaki Korku ve Endişelerinin Değerlendirilmesi

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ABSTRACT

Objective: The aim of our study was to determine concerns and fears of parents of children with asthma towards the use of ICS, and its' impact on asthma management.

Material and Methods: This prospective study was conducted between 01.04.2023 and 01.06.2024, at the Dr.Burhan Nalbantoğlu Hospital, The Pediatric Immunology and Allergy Clinic, and patients who had been followed up with asthma diagnosis, were included.

Results: There was 100 patients in our study. Out of 100 patients, 67 (67%) were male. The median age of the children was 84.5 months (IQR,73.2-119.5). The median age of asthma diagnosis was 65.5 months (IQR, 24-76.75). All of the patients were using asthma maintenance therapy, and 87 (87%) patients were using it regularly. Out of 100 parents, 78 (78%) had fear and concern of potential adverse effects of using inhaled corticosteroid treatment long time in their children. The most common fears and concerns were described as causing weight gain in 34 (34%) parents, dependance to drug in 33 (33%) parents, and causing growth retardation in 27 (27%) parents. Patients having fear of corticosteroid tended to have difficulties in medicine use (p=0.001). Patients not knowing the treatment of asthma, and not knowing the role of corticosteroid in asthma tended not to have fear of corticosteroid treatment (p=0.046, and 0.001 respectively).

Conclusion: In our study, 78% of the parents had fear and concern of potential adverse effects of inhaled corticosteroid treatment. The most common fear and concerns were about weight gain, dependance to drug, and growth retardation.

Key Words: Asthma, Child, Corticophobia

ÖZ

Amaç: Çalışmamızın amacı astımlı çocukların ebeveynlerinin inhale kortikosteroid kullanımına yönelik endişelerini ve korkularını ve astım yönetimi üzerindeki etkisini belirlemekti.

Gereç ve Yöntemler: Bu prospektif çalışmaya, 01.04.2023 ile 01.06.2024 tarihleri arasında Dr.Burhan Nalbantoğlu Hastanesi Çocuk İmmünoloji ve Alerji Kliniği'nde astım tanısıyla takip edilen hastalar alındı.

Bulgular: Çalışmamızda 100 hasta vardı. Hastaların 67'si (%67) erkekti. Çocukların ortanca yaşı 84.5 ay (IQR, 73.2-119.5)'di. Astım tanısının ortanca yaşı 65.5 ay (IQR, 24-76.75)'di. Hastaların tamamı astım tanısı ile tedavi almaktaydı ve 87 (%87) hasta tedavisini düzenli olarak kullanıyordu. Toplam 100 ebeveynden 78'i (%78) çocuklarında uzun süre kortikosteroid tedavisinin olası olumsuz etkileri konusunda korku ve endişe duyduğu saptandı. En yaygın korku ve endişeler, 34 (%34) ebeveynde kilo alımına, 33 (%33) ebeveynde ilaca bağımlılığa ve 27 (%27) ebeveynde büyüme geriliğine neden olması olarak tanımlandı. Kortikosteroid korkusu olan hastalar ilaç kullanımında zorluk yaşama

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eğilimindeydi (p=0.001). Astım tedavisini bilmeyen ve kortikosteroidin astımdaki rolünü bilmeyen hastalar kortikosteroid tedavisinden korkma eğiliminde değildi (sırasıyla p=0.046 ve 0.001).

Sonuç: Çalışmamızda ebeveynlerin %78'i kortikosteroid tedavisinin olası olumsuz etkileri konusunda korku ve endişe duyduğu saptandı. En yaygın korku ve endişeler kilo alımı, ilaca bağımlılık ve büyüme geriliği ile ilgiliydi.

Anahtar Sözcükler: Astım, Çocuk, Kortikofobi

INTRODUCTION

Asthma is the most common chronic disease seen in children and its prevalence is increasing (1). Childhood asthma prevalence is ranged from 2.1% in developing to 32.2% in developed countries (2). Asthma is a heterogenous disease, usually characterized by chronic airway inflammation. It is defined by the history of respiratory symptoms, such as wheezing, shortness of breath, chest tightness and cough, that vary over time and in intensity, together with variable expiratory airflow inflammation (3).

Long-term goals of asthma management are to achieve good symptom control, and minimize the future risk of asthma-related mortality, exacerbations, persistent airflow limitation and side-effects of treatment. Inhaled corticosteroid (ICS) is the first line recommended controller drug for asthma treatment (3). Non-adherence to ICS is common and can result in persistent symptoms, cause increase in mortality and morbidity of asthma, cause increase in the number of missed school days, and increase the urgent health-care visits. If parents understand the importance of inhaled corticosteroid treatment in asthma treatment, it will increase the compliance of the treatment, reduce patients' symptoms, and reduce their emergency visits. Parents' inadequate knowledge about the nature of the disease and asthma medications, as well as having fears and concerns about the potential adverse effects of ICS treatment, may contribute to non-compliance with the treatment (4). In the literature, there were few studies published on this subject (5-9).

The aim of our study was to determine the fears and concerns of parents of children with asthma, towards the use of ICS, and its' impact on asthma management.

MATERIALS and METHODS

The study was conducted between 01.04.2023 and 01.06.2024, at the Dr. Burhan Nalbantoğlu Hospital, The Pediatric Immunology and Allergy Clinic, and patients who had been followed up with asthma diagnosis, were included. Inclusion criteria of the patients were determined as followed-up in the clinic with asthma diahnosis, and being between 6 and 18 years age. Asthma was diagnosed according to the Global Initiative for Asthma guideline (GINA). For symptom control analyse, GINA assessment of asthma control for children 6 years and above were used. The frequency of asthma symptoms (days per week), any night waking due to asthma or limitation of activity, and for patients using a SABA reliever, frequency of its use for relief of symptoms were asked for the past 4 weeks. The treatment of asthma was classified according to the step treatment in GINA guideline. The asthma attack was identified as a change in symptoms and lung function from the patients' usual status according to GINA guideline (3). The exclusion criteria were having chronic respiratory illness rather than asthma, having history of prematurity, having corticosteroid treatment for other reasons, and being above 18 years age, and below 6 years age.

We collected data from medical records including medical history, demographic information such as age, gender, having additional allergic disease, and chronic disease, and symptoms, physical examination, laboratory findings, treatment and hospitalization for asthma.

The scale, prepared by the researcher, evaluating parents' opinions about the fear and concern of corticosteroid treatment in patients diagnosed with asthma, was applied to the parents by the researcher during the outpatient clinic visit. In this scale, asthma disease, its symptoms, treatment, application methods of treatments, the role of corticosteroid treatment in asthma, parents' reasons for fear and concern of potential adverse effects of corticosteroid use, whether they terminated the treatment due to anxiety/fear, their knowledge about the side effects of corticosteroid treatment, difficulty in using asthma treatment. Additionally, parents' quality of life based on education and financial status were questionned. The parents chose answers from options provided.

The G* power 3.1.9.4 analysis program was used to calculate the sample size of this study. It was determined that at least 96 parents should participate in the sample of this study with an effect size of 0.30, a margin of error of 0.05%, df= 96 and 90% power. In total, one hundred parents participated in this study.

This study was approved by the Dr. Burhan Nalbantoğlu Ethics Committee (EK 14/24-15.04.2024). Informed consent was obtained from all participants. Informed consent was taken from the patients' parents.

Statistical Analysis:

IBM Statistical Package for the social sciences, version 22.0 (SPSS Inc., Armonk, NY, IBM Corp., USA). Results were expressed as percentile (absolute numbers), as mean and standard deviation, or as median and interquartile range (IQR) as required. Chi-square test was performed to compare the categorical variables, Mann-Whitney test was used to compare the non-normally distributed continuous variables, and the

independent t-test was used for normally distributed continuous data. p value < 0.050 was considered statistically significant.

RESULTS

There was 100 patients in our study. Out of 100 patients, 67 (67%) were male. The median age of the children was 84.5 months (IQR,73.2-119.5). The median age of asthma diagnosis was 65.5 months (IQR, 24-76.75). Sixty-five (65%) patients had diagnosed with wheezy child, the symptoms in these children continued after the age of six, and they continued to be followed with the diagnosis of asthma. The median of the duration between asthma diagnosis and the questionnaire interview was 33.5 months (IQR,7.2-64). Sixty (60%) patients had concomitant allergic diseases. Fifty-nine (59%), two (2%), and one (1%) had allergic rhinitis, food allergy and drug allergy respectively. Skin prick tests (SPT) were performed in 95 (95 %) patients. Fifty-five (55%) of them had aeroallergen sensitivity. Commonly pollen allergen was detected with a rate of 39%. Three (3%) had concomitant chronic disease, one diagnosed with epilepsy, one with congenital heart disease, and one with tracheosaphageal atresia. Fifty (50%) patients' family members had allergic disease, commonly mothers with a diagnosis of asthma with a rate of 29% (Table I). Educational status and their current standard on living based on monthly salary were shown in Table II.

All of the patients were using asthma maintenance therapy, and 13 (13%) patients were using it irregularly. Three (3%) patients were using asthma medication with wrong technique. According to GINA, patients were using maintenance therapy commonly at step one with a rate of 70% (n=70). While taking the medication, 91 (91%) patients were using metered dose inhaler, and 5 (5%) patients were using dry-powder inhaler. Sixty-six (66%), 16 (16%), 14 (14%), and four (4%) patients were using only ICS, both ICS and leukotriene antagonist, both ICS and LABA, and only leukotriene antagonist treatment (Table III).

According to GINA guideline, in the last 3 months, 70 (70%), 21 (21%), and 9 (9%) patients were defined as well controlled, partly controlled, and uncontrolled respectively. Twenty-three (23%) patients had asthma attack in the past one year, and 12 (21%) were hospitalized due to the asthma attack in the past one year (Table III).

Parents perceptions about symptoms related with asthma were questionned. Cough was defined in 80 (80%) parents, dyspnea in 75 (75%), and wheezing in 55 (55%) parents. Parents described that cough was worsened at night in 68 (68%) patients, and at the early morning in 32 (32%) patients (Table IV).

Questions about pathogenesis and triggers of asthma were asked to the parents. Fifty-six (56%) parents defined the asthma as airway narrowing, 37 (37%) as noisy breathing, 35 (35%) as inflammation, 27 (27%) as smoke reaction, 24 (24%) as infections. Twenty-one (21%) parents mentioned that they had no information about this issue (Table IV).

The treatment of asthma knowledge of parents were questionned. Inhaled corticosteroid, bronchodilators, leukotriene antagonists,

Table I: Characteristics of study population

Gender	
Male*	67 (67)
Female / Male	0.49
Age†	
Age (months)	84 (73-117.25)
The age of asthma diagnosis (months), mean, (IQR)	64.5 (24-76.75)
Concomitant Allergic Diseases*	
Allergic rhinitis	59 (59)
Food allergy	2 (2)
Drug allergy	1 (1)
Family member having allergic disease	50 (50)
Asthma	29 (29)
Allergic rhinitis	26 (26)
Food allergy	1 (1)
Atopy status*	
Patients performed skin prick test	95 (95)
Aeroallergen sensitization	55 (55)
Pollen	39 (39)
House dust mite	38 (38)
Mold	14 (14)
Cat dander	15 (15)
Dog dander	5 (5)
Cockroach	3 (3)

**: n(%), †: median, (IQR)*

Table II: Demographic characteristics of the parents

Educational status*	
Primary school graduate	11 (11)
Secondary school graduate	13 (13)
High school graduate	36 (36)
University graduate	40 (40)
Current standard on living based on monthly salary*	
Low	16 (16)
Medium	79 (79)
High	5 (5)

**: n(%)*

Table III: Characteristics of clinic and treatment of the patients

Gina Assessment of Asthma in The Last 3 Months*	
Well controlled	70 (70)
Partly controlled	21 (21)
Uncontrolled	9 (9)
Patients having asthma attack in the past 1 year	23 (23)
Patients hospitalized in the last one year for asthma attack	12 (12)
Treatment*	
Only using Inhaled corticosteroids (ICS)	66 (66)
Only using Anti-leukotrienes	4 (4)
Both using ICS and anti-leukotrienes	16 (16)
Both using ICS and LABA	14 (14)
Treatment step according to GINA*	
Step 1	70 (70)
Step 2	1 (1)
Step 3	29 (29)

**: n(%)*

Table IV: Parents' perceptions about asthma symptoms, mechanisms, treatment and routes of administration

Asthma Symptoms known by parents*	
Cough	80 (80)
At night	68 (68)
At early morning	32 (32)
Wheezing	55 (55)
Dyspnea	75 (75)
Early morning chest tightness	30 (30)
The pathogenesis and triggers of asthma known by parents*	
Airway narrowing	56 (56)
Noisy breathing	37 (37)
Inflammation	35 (35)
Smoke reaction	27 (27)
Infections	24 (24)
Others	2 (2)
Don't know	21 (21)
Treatment of asthma known by parents*	
Inhaled steroids	72 (72)
Bronchodilator	61 (61)
Leukotriene antagonist	46 (46)
Systemic steroids	28 (28)
Antibiotics	19 (19)
Don't know	8 (8)
Routes of administration of asthma medicine known by parents*	
Oral	66 (66)
Nebulizer	62 (62)
Inhaler	46 (46)
Injection	16 (16)
Don't know	6 (6)

***:** *n(%)*

Table V: Parental opinions about inhaler corticosteroid treatment in asthma

Role of inhaler corticosteroid in asthma treatment*	
Know	73 (73)
Control asthma symptoms	51 (51)
Prevent asthma exacerbations	45 (45)
Relieve bronchial constriction	39 (39)
Reduce airway inflammation	22 (22)
Strengthen the lung	16 (16)
Don't know	27 (27)
Concerns about long term use of inhaler corticosteroid*	
Not having fear/concern	22 (22)
Having fear/concern about side effects	78 (78)
Weight gain	34 (34)
Dependence to drug	33 (33)
Growth retardation	27 (27)
Causing organ damage	24 (24)
Need for larger doses later on (become less effective)	23 (23)
Decrease immunity, and cause infection	22 (22)
Causing teeth problems	22 (22)
Bone weakness	16 (16)
Causing hyperreactivity	10 (10)
Causing skin problems	9 (9)
Developing cancer	7 (7)
Difficulties of inhaled corticosteroid (ICS) use*	
Not having difficulties in using maintenance treatment	47 (47)
Having difficulties in using maintenance treatment	53 (53)
Reluctance to use medication	27 (27)
Cost (expensive)	23 (23)
Inability to use medication regularly	20 (20)
Forgetting in using it	16 (16)
Problems with using inhaler devices	15 (15)

***:** *n(%)*

and systemic corticosteroid were known as medications of asthma in 72 (72%), 61 (61%), 46 (46%), and 28 (28%) parents. Nineteen (19%) parents described antibiotics for asthma treatment. Eight (8%) parents mentioned that they did not know any type of medicine for asthma. Among these eight parents, all of their children were using asthma maintenance therapy, and 37.5% (n=3) were using it irregularly (Table IV).

Out of 100 parents, 51 (51%) parents stated that inhaled corticosteroid treatment controls asthma symptoms, 45 (45%) stated that prevents asthma exacerbations, 39 (39%) parents stated that relieves bronchial constriction, 22 (22%) stated that reduces airway inflammation, and 16 (16%) stated that strengthens the lung. Twenty-seven (27%) mentionned that they had not known about role of corticosteroid in asthma treatment (Table V).

Out of 100 parents, 78 (78 %) had fear and concern of potential adverse effects of using inhaled corticosteroid treatment long time in their children. The common fear and concerns were described as causing weight gain in 34 (34%) parents, causing dependance to drug in 33 (33%) parents, causing growth retardation in 27 (27 %) parents (Table V).

Among 100 patients who were using maintenance therapy, 53 (53%) patients had difficulties in using medications. The common difficulties were defined as relutance to use (27 [27%]), as being expensive (23 [23%]), as inability to use medication regularly (20 [20%]) (Table V).

Out of 100 patients, 13 (13%) patients were using maintenance therapy irregularly. Seven (53.8%) of patients had stated that they had difficulties in using treatment. Eight (61.5%) patients had fear and concern of corticosteroid treatment. There was statistically significant difference between using asthma maintenance therapy irregularly and not knowing both asthma treatment and the role of corticosteroid treatment in asthma. Patients tended to use more irregulary in patients who did not know both asthma treatment and the role of corticosteroid treatment in asthma (p=0.032, and 0.003 respectively). There was no statistically difference between using irregularly and having fear of inhaled corticosteroid treatment (p=0.125).

There was statistically significant difference between having fear of inhaled corticosteroid treatment and having difficulties of using asthma treatment. Patients having fear of corticosteroid tended to have difficulties in using asthma maintenance therapy (p=0.001). There was no statistically significant difference between having fear of inhaled corticosteroid treatment, and gender, age, parents' educational level, social status, the duration time between asthma diagnosis and questionnaire evaluation, having concomitant allergic disease, having aeroallergen positivity, GINA treatment

Table VI: Evaluation of having fear/concern of long term use of inhaler corticosteroid treatment according to characteristics of the patients

	Having fear of long term use of inhaler corticosteroid n=78	Not having fear of long term use of inhaler corticosteroid n=22	p
Age of the patients, median, months	84	90	0.515†
Gender, Male*	49 (62.8)	18 (81.8)	0.094‡
The duration time between asthma diagnosis and questionnaire evaluation, median, months	45	18	0.396†
Patients having concomitant allergic disease*	50 (64.1)	10 (45.5)	0.115‡
Patients having allergic rhinitis*	50 (64.1)	9 (40.9)	0.051‡
Patients having aeroallergen sensitization*	42 (53.8)	13 (59.1)	0.720‡
Education level of family* Primary school education Secondary school graduate High school graduate University graduate	8 (10.3) 10 (12.8) 26 (33.3) 34 (43.6)	3 (13.6) 3 (13.6) 10 (45.5) 6 (27.3)	0.566‡
Current standart on living based on monthly salary* Low Medium High	9 (11.5) 65 (83.3) 4 (5.1)	7 (31.8) 4 (63.6) 1 (4.5)	0.072‡
Patients' asthma control status according to GINA assesment* Well controlled Partially controlled Non-controlled	56 (71.8) 15 (19.2) 6 (7.7)	13 (59.1) 6 (27.3) 3 (13.6)	0.431‡
Patients' asthma treatment* Only using Inhaled corticosteroids (ICS) Only using Anti-leukotrienes Both using ICS and anti-leukotrienes Both using ICS and LABA	54 (69.2) 2 (2.6) 12 (15.4) 10 (12.8)	12 (54.5) 2 (9.1) 4 (18.2) 4 (18.2)	0.199‡ 0.168‡ 0.752‡ 0.522‡
Step of asthma treatment* Step 1 Step 2 Step 3	56 (71.8) 1 (1.3) 21 (26.9)	14 (63.6) 0 8 (36.4)	0.615‡
Having difficulties of asthma medication use*	48 (61.5)	5 (22.7)	0.001‡

***:** *n(%),* **†:** *Mann-Whitney test,* **‡:** *Chi-square test*

Table VII: Evaluation of having fear of inhaler corticosteroid treatment according to knowledge about asthma diseases and treatment

	Having fear of corticosteroid treatment n=78	Not having fear of corticosteroid treatment n=22	p†
Not knowing the asthma disease*	15 (19.2)	6 (27.3)	0.413
Not knowing the treatment of asthma*	4 (5.1)	4 (18.2)	0.046
Not knowing the routes of the asthma treatment*	4 (5.1)	2 (9.1)	0.489
Not knowing the role of corticosteroid in asthma*	12 (15.4)	15 (68.2)	0.000

***:** *n(%),* **†:** *Chi-square test*

step, GINA symptom control status, having asthma attack, and having hospitalization (Table VI).

There was statistically significant difference between having fear of corticosteroid treatment, and knowledge of information about treatment of asthma, and knowledge of the role of corticoseroid treatment in asthma. Patients not knowing the treatment of asthma, and not knowing the role of corticosteroid in asthma tended not to have fear of corticosteroid treatment (p=0.046, and 0.001 respectively) (Table VII).

DISCUSSION

In this study, 100 pediatric asthma diagnosed patients were included. Out of 100 parents, 78 (78%) had fear and concern of potential adverse effects of using corticosteroid treatment long time in their children. The most common fears and concerns were described as causing weight gain in 34 (34%) parents, causing dependance to drug in 33 (33%) parents, and causing growth retardation in 27 (27%) parents. Fifty-three

(53%) patients had difficulties with using medications. The most common difficulty was defined as reluctance to use with a rate of 27%. Patients having fear of corticosteroid tended to have more difficulties in using maintenance therapy. Thirteen (13%) patients were using maintenance therapy irregularly. Patients tended to use more irregulary in patients who did not know both asthma treatment and the role of corticosteroid treatment in asthma. Patients not knowing the treatment of asthma, and not knowing the role of corticosteroid in asthma tended not to have fear of corticosteroid treatment.

According to World Health Organization, in developed countries, adherence to medicine among patients having chronic diseases were 50% (10). Adherence rates to medications in asthma were observed to range between 30-70% of patients (11). Non-adherence to therapy commonly concludes from inadequate knowledge about the disease, and its' treatment, occurence of side effects, and inadequate caregiver communications (4). In our study, 13 (13%) patients were using maintenance therapy irregularly. Eight of them had fear and concern of inhaled corticosteroid treatment. Patients not knowing both the asthma treatment and the role of corticosteroid treatment in asthma, tended to use maintenance therapy irregularly.

According to GINA, ICS is a preferred controller treatment (3). The minimum effective dose of ICS is recommended to avoid possible side effects of corticosteroids. Side effects are commonly local side effects like oral candidiasis, dental caries, and dysphonia. These side effects can be prevented by rinsing mouth and face after inhalation, using correct inhaler technique, and using chamber with valve (12). In a pediatric study, 53% of the parents reported their concern about side effects (5). In another pediatric study, 65.5% of parents were observed to worry about the long-term effects of ICS (13). In our study, 78% of the parents had fear and concern of potential adverse effects of inhaled corticosteroid treatment. Although having high rate of fear and concern, the rate of patients using treatment regularly were observed to be high in our study.

In a study, in 603 adult asthma diagnosed patients, 53% of the patients (47% of ICS users) stated that they had fear of using ICS. Commonly fears in regard to ICS, were causing weight gain, decreasing in bone density, and a reduction in efficacy of medication over time (4). In a study, 42% of the mothers had concern in their asthma diagnosed children about weight gain due to ICS (14). Unlike these findings, in an another study, 5% of the parents had concern of weight gain due to ICS in their children with asthma (5). A meta-analysis in pediatric population observed that ICS has no effect on patients' body weight index (15). These different concerns rates may have been obtained due to cultural differences in ideal weight and body perception. In our study, the most common fear and concerns was also weight gain with a rate of 34%.

In a study, it was observed that 29% (n=84) of the parents had fear of 'inhaler dependency' in their asthmatic children (16). According to Zedan, it was observed that 9% of parents had fear of addiction to corticosteroid treatment (5). According to Roncada and et al. (17), 40% of the parents observed to believe drug dependance to ICS. It was observed that the concern about ICS addiction may originate from socio-cultural perceptions of inhaled drugs such as marijuana and heroin (7). In our study, 33% of the parents had fear of dependence to drugs.

It was observed that uncontrolled asthma have a negative effect on linear growth (18). In a study, children with asthma who have received long-term treatment with budesonide attain normal adult height (19). In our study, 27% of the parents had fear of growth retardation. Oral corticosteroids are known to reduce bone density and cause increasing in fracture risk in children, unlike this finding ICS on childrens' bone health has not observed yet (20). In studies, it was not observed that either ICS significantly reduce the bone mineral density, or increase the risk of fractures among children with asthma (21-24). In another study, it was observed that the risk of osteopenia and osteoporosis are neglible in patients receiving low to moderate dose of ICS (12). In our study, 16% of the parents had fear of bone weakness.

According to Boulet, misconception of reduction in efficacy of medication over time was observed in 38% of the patients. Although it is an expected condition to be seen in severe patients, it may also be in mild and moderate patients (4). In our study, 23% of the parents had fear of need for larger doses later on.

According to Rangachari and et al. (25), it was observed that parents who misunderstand the role of their childs' ICS medicine are less likely to report adherence to its' daily use. According to Boulet, most patients mentioned that they had not discussed their fears and concerns about ICS with their physician. After discussing with their physican, 75% of the patients stated that their concerns were eased (4). It was observed that parents' perspective of children with asthma affect the duration and dose of the ICS treatment they will give to their children and directly influence the level of asthma control. This perspective can be modified by partnership with physician (26). Therefore, talking to patients and informing them about their treatments and the possible side effects of these treatments will increase the confidence and compliance of patients and their caregivers with the treatment, and will provide significant benefits in symptom control of the patients. In addition to allocating sufficient time for anamnesis and physical examination at each visit, allocating time to issues that patients and parents fear and worry about the disease and/or its treatment, will increase the success of the treatment. Unlike these findings, in our study, patients who did not know the treatment of asthma, and not know the role of corticosteroid in asthma, tended not to have fear of corticosteroid treatment. However, it was observed that patients tended to use more irregulary in patients who did not know both the asthma treatment and the role of corticosteroid treatment in asthma.

CONCLUSION

In our study, 78% of the parents had fear and concern of potential adverse effects of inhaled corticosteroid treatment. The most common fear and concerns were about weight gain, dependance to drug, and growth retardation.

This study prompts that it is important to provide adequate information about disease and medication to the parents, and enlighten them about facts for easing concerns and fears of parents about side effects of corticosteroid treatment, improving adherence to treatment and improving outcomes of children' asthma control.

REFERENCES

1. Akinbami LJ, Simon AE, Rossen LM. Changing Trends in Asthma Prevalence Among Children. Pediatrics 2016;137:1-7.
2. Asher MI, W eiland SK. The International Study of Asthma and Allergies in Childhood (ISAAC). ISAAC Steering Committee. Clin Exp Allergy 1998;28:52-66.
3. https://ginasthma.org/gina-reports/
4. Boulet LP. Perception of the role and potential side effects of inhaled corticosteroids among asthmatic patients. Chest 1998;113:587-92.
5. Zedan M, Regal MEE, Osman EA, Fouda AE. Steroid Phobia among Parents of Asthmatic Children: Myths and Truth. Iran J Allergy Asthma Immunol 2010;9:163-8.
6. Vrijens B, Geest SD, Hughes DA, Przemyslaw K, Demonceau J, Ruppar T, et al. A new taxonomy for describing and defining adherence to medications. Br J Clin Pharmacol 2012 ;73:691-705.
7. Hui RWH. Inhaled corticosteroid-phobia and childhood asthma: Current understanding and management implications. Paediatr Respir Rev 2020:33:62-6.
8. Ip KI, Hon KL, Tsang KYC, Leung TNH. Steroid phobia, Chinese medicine and asthma control. Clin Respir J 2018;12:1559-64.
9. Özçeker D, Uçkun U, İslamova D, Tamay Z, Güler N. Corticosteroid phobia among parents of asthmatic children. Turk J Pediatr 2018;60:142-6.
10. Mathes T, Pieper D, Antonie SL, Eikermann M. 50% adherence of patients suffering chronic conditions- where is the evidence?. Ger Med Sci 2012;10:Doc 16. doi: 10.3205/000167.
11. Katz Y, Goldberg M. Non-adherence, non-compliance or non-concordance in asthma: Patients not following the medical regimen. IMAJ 2007;9:389-90.
12. Hossny E, Rosario N, Lee BW, Singh M, Ghoneimy DE, Soh JY, Souef PL. The use of inhaled corticosteroids in pediatric asthma: update. World Allergy Organ J 2016;9:26.
13. Duvnjak JP, Vukozac EL, Matana A, Mikic IM. Parents' beliefs about medicines and their influence on inhaled corticosteroid adherence in children with asthma. Children (Basel) 2024;11:167.
14. Trojanowska A, Emeryk A, Zarzycka D. Adherence to therapy regimen by children with asthma and their parents. Postepsy Dermato Alergol 2022;39:258-64.
15. Pruteanu AL, Chauhan BF, Zhang L, Prietsch SO, Ducharme FM. Inhaled corticosteroids in children with persistent asthma: dose response effects on growth. Cochrane Database Syst Rev 2014;2014:CD009878.
16. Abu-Shaheen A, Alfayyad I, Nofal A, Al Tannir M, Al Madaney M, Heena M. Perceptions and practices in parents of Saudi Children with asthma: A cross-sectional survey. Cureus 2018;10:e2213.
17. Roncada C, Oliveira SG, Cidade SF, Rafael JG, Ojeda BS, Dos Santos BR, et al. Asthma treatment in children and adolescents in an urban area in southern Brazil: popular myths and features. J Bras Pneumol 2016;42:136-42.
18. Bush, A. Inhaled Corticosteroid and Children's Growth. Arch Dis Child 2014;99: 191–2.
19. Kwda A, Gldc P, Baui B, Kasr K, Us H, Wijeratne S, et al. Effect of long term inhaled corticosteroid therapy on adrenal suppression, growth and bone health in children with asthma. BMC Pediatr 2019;19:411.
20. Price D, Castro M, Bourdin A, Fucile S, Altman P. Short-course systemic corticosteroids in asthma:striking the balance between efficacy and safety. Eur Respir Rev 2020;29:190151.
21. Alyasin S, Sadeghi FS, Saki F, Dabaghmanesh M. Evaluation of vitamin D deficiency and low bone mass in children with asthma in fars province: A case control study. Health Sci Rep 2024;7:e2086.
22. Gray N, Howard A, Zhu J, Feldman L, To T. Association between inhaled corticosteroid use and bone fracture in children with asthma. JAMA Pediatr 2018 ;172:57-64.
23. Schlienger RG, Jick SS, Meier CR. Inhaled corticosteroids and risk fractures in children and adolescents. Pediatrics 2004;114:469-73.
24. Loke YK, Gilbert D, Thavarajah M, Blanco P, Wilson AW. Bone mineral density and fracture risk with long-term use of inhaled corticosteroids in patients with asthma: systematic review and meta-analysis. BMJ Open 2015;5:e008554.
25. Rangachari P, May KR, Stepleman LM, Tingen MS, Looney S, Liang Y, et al. Measurement of key constructs in a holistic framework for assessing self management effectiveness of pediatric asthma. Int J Environ Res Public Health 2019;16:3060.
26. Duvnjak JP, Vukozac EL, Ursic A, Matana A, Mikic IM. Perception of ıllness and fear of inhaled corticosteroid use among parents of children with asthma. Children (Basel) 2023;10:1597.