



doi • 10.5578/tt.66524
Tuberk Toraks 2018;66(1):43-51
Geliş Tarihi/Received: 02.02.2018 • Kabul Ediliş Tarihi/Accepted: 15.04.2018

KLİNİK ÇALIŞMA
RESEARCH ARTICLE

Smoking attitudes of the patients with allergic rhinitis: a comparison with asthma and chronic obstructive pulmonary disease. Are there differences when only upper airways are involved?

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SUMMARY

Smoking attitudes of the patients with allergic rhinitis: a comparison with asthma and chronic obstructive pulmonary disease. Are there differences when only upper airways are involved?

Introduction: Despite the well documented relationship between lower airway diseases and smoking, there are limited data about smoking and allergic rhinitis (AR). In this study, we aimed to document the smoking behaviour and environmental tobacco smoke (ETS) exposure of the patients with AR in comparison with patients with asthma, chronic obstructive pulmonary diseases (COPD) and healthy controls (HC).

Materials and Methods: Demographics and disease characteristics were recorded from case files whereas smoking history, childhood and current exposures to ETS, as well as the smoking behaviors were investigated by a self reported questionnaire.

Results: A total of 937 subjects comprising patients with AR (n= 252), asthma (n= 249), COPD (n= 188) and HCs (n= 248) were enrolled in the study. The rates of active smokers were 35% (HCs), 26% (COPD), 21% (AR), and 11% (asthma). Exposure to ETS while with friends was significantly higher among HCs and AR groups (p< 0.0001). The rate of willingness to quit smoking is high in AR patients (73%) but they did not determined about date of quitting.

Conclusion: Our results showed that a significant number of patients with AR actively smoke and neither the patients with AR nor the people in their surroundings were sufficiently aware of the health hazards of smoking with AR. It seems necessary to inform patients with about the health effects of smoking on all respiratory tract diseases.

Key words: Allergic rhinitis, smoking attitudes, asthma, COPD, environmental tobacco smoke

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ÖZET

Allerjik rinitli hastaların sigaraya yönelik tutumları astım ve KOAH hastalarından farklı mı?

Giriş: Sigaranın alt hava yolu hastalıkları ile ilişkisi iyi tanımlanmıştır. Fakat sık görülen ve önemli bir üst hava yolu hastalığı olan allerjik rinit (AR) ile ilişkisi konusunda sınırlı bilgi bulunmaktadır. Bu çalışma ile amacımız AR hastalarının sigara içme tutumları ve çevresel pasif sigara dumanı maruziyetlerini astım, kronik obstrüktif akciğer hastalığı (KOAH) gibi alt hava yolu hastalıklarıyla ve sağlıklı kontrollerle karşılaştırarak ortaya koymaktır.

Materyal ve Metod: Bireylerin demografik özellikleri ve hastalık karakteristikleri dosyalardan kaydedildi. Sigara öyküleri, çocukluk çağı ve şimdiki pasif sigara dumanı maruziyetleri, sigara konusundaki tutumları araştırmacılar tarafından hazırlanan bir anket ile değerlendirildi.

Bulgular: Çalışmaya toplam 937 hasta [AR (n= 252), astım (n= 249), KOAH (n= 188) ve sağlıklı kontrol (n= 248)] alındı. Aktif sigara içenlerin oranına gruplara göre bakıldığında sağlıklı kontrollerde %35, KOAH grubunda %26, AR'lılarda %21 ve astımlı hastalarda %11 idi. Arkadaşları ile birlikte iken pasif sigara duman maruziyeti sağlıklı kontrol ve AR'lı hasta gruplarında diğer iki gruba göre belirgin olarak daha fazlaydı (p< 0.0001). Astım ve KOAH'lılarla karşılaştırınca AR'lı hastaların çevresindekiler yanlarında sigara içmemeye daha az özen gösteriyordu ama AR'lı hastalar da bu konuda etraflarındakileri daha az uyarıyordu. AR'lı hastalar arasında sigarayı bırakmayı isteme oranı yüksek (%73) fakat bu hastalardan hiç birisi kendisine sigarayı bırakma günü belirlememişti.

Sonuç: AR'lı hastaların arasında hem aktif olarak sigara içme oranları yüksekti hem de etrafındaki kişiler sigaranın AR hastaları için zararlı olabileceğini düşünerek yanlarında sigara içmemeye özen göstermiyorlardı. Bu durum bize toplumun sigaranın sadece alt hava yolu hastalıklarının değil tüm hava yolu hastalıklarının seyrini kötü etkilediği konusunda bilgilendirilmesi gerektiğini göstermiştir.

Anahtar kelimeler: Allerjik rinit, sigara içme tutumları, astım, KOAH, pasif sigara dumanı maruziyeti

INTRODUCTION

Smoking affects the health and quality of life of both smokers and those in the vicinity. So far, more than 4000 chemicals in tobacco smoke have been identified and at least 81 of them are known to be carcinogenic (1). Although the harmful effects of smoking on the human body are well known, cigarettes are still consumed at high rates all around the world. The World Health Organization (WHO) has estimated that 1.22 billion people smoke worldwide and 1 billion of them live in developing countries (2,3). Turkey is in tenth place among countries with common tobacco use (4). This high smoking rate brings the possibility that even the patients with airway diseases such as asthma smoke actively.

There are several ways in which smoking is related to lower airway diseases. Besides being a risk factor for the development of asthma and chronic obstructive pulmonary disease (COPD), smoking is also known to increase respiratory symptoms, worsen lung function and increase exacerbation rates in these patients (2,5,6). Moreover, when compared with healthy people, smoking increases the risk of mortality by around two-fold in patients with COPD (5). Despite this fact, a significant number of patients with asthma and COPD are known to have inadequate attitudes towards smoking and surprisingly, continue smoking (5).

Allergic rhinitis (AR) is common throughout the world and affects life negatively. It has an increasing prevalence in the developing countries and causes a significant economic burden. In our country AR prevalence is 1.6-27.5% in adults and it was increased in the last 10 years (7). On the other hand, despite being a common airway disease, there are no data about smoking behaviours and motivation to quit in patients with AR. So far, a limited number of studies have investigated the relationship between the aggravation of symptoms of AR and progression to asthma with smoking in active or passive smokers (8-10). But, it has not been reported whether having AR affects patients' perceptions of smoking and their attitudes toward smoking.

In this study, we primarily aimed to investigate the smoking behaviours of patients with AR as well as their past and current exposures to environmental tobacco smoke (ETS) in comparison with patients with lower airway diseases of asthma, and COPD and with healthy controls (HCs). Secondly, we assessed dependence and motivation to quit smoking of the groups.

MATERIALS and METHODS

This observational study was cross-sectionally designed and included all consecutive patients who were diagnosed as having asthma, AR or COPD and who were

admitted to our outpatient clinics of departments of Immunology and Allergy or Chest Diseases between June 1st, 2012 and June 1st, 2014. The diagnosis of asthma, AR and COPD were based on available current international guidelines (11-13). Patients were asked to participate in the study and those who accepted were consecutively enrolled.

Initially, demographics and disease characteristics were recorded by a physician from the research team. After obtaining these data, the patients were asked to complete a 3-part questionnaire. The questionnaire was developed by the authors in accordance with the research hypothesis and the availability was tested on patients before used. The first part of the questionnaire was filled by all study groups. This part included related to current and childhood exposure to ETS and smoking behaviors of people in their surroundings. The second part consisted of 8 questions and was completed only by ex-smokers. In this part, they were asked about the amount and duration of their past cigarette consumption, quitting motivations and behaviors. The third part consisted of 17 questions and was completed only by active smokers. This part of the questionnaire included questions about daily cigarette consumption, duration, and previous attempts at quitting smoking. Their addiction level was also assessed by using the Fagerström Nicotine Dependence Scale. According to this scale, scores 1-2 indicates low nicotine dependence, 3-4 indicates low to moderate, 5-7 indicates moderate and > 8 indicates high nicotine dependence.

Assessment of Disease Activity/Severity

Asthma control was assessed using asthma control test (ACT) scores in patients with asthma. An ACT score of 25 indicated totally controlled asthma, 20-24 indicated partially controlled asthma, and a score less than 20 indicated uncontrolled asthma (14). Patients with COPD are classified to 4 stages according to Global Initiative for Chronic Obstructive Lung Disease 2010 classification and the Allergic Rhinitis and its Impact on Asthma (ARIA) 2010 classification are used for the evaluation of patients with allergic rhinitis (12,13).

HCs comprised subjects who had no respiratory symptoms and diseases and were willing to participate in the study.

This study was conducted in accordance with the amended Declaration of Helsinki. Written informed consent was obtained from all participants. The study

was approved by the Medical Ethics committee of Ankara University (Approval number: 10-297-12).

Statistical Analysis

The statistical analysis was performed using SPSS version 20.0 (SPSS Inc., Chicago, IL, USA). Numeric values with normal dispersion were expressed as means \pm SD, whereas abnormal dispersed variables were given as median values (min-max). Categorical variables values were given as n (percentage). Chi-square tests were used for comparison of two independent groups for categorical data. Student's t-test was used to compare the two normally dispersed groups. The importance of the difference according to the means between groups was examined using ANOVA variances analyses. The Mann-Whitney U or Kruskal-Wallis test was used to determine the importance of the difference in medians between independent groups and Wilcoxon's signed-rank test was used in related samples. All directional p values were two-tailed and significance was assigned to values lower than 0.05.

RESULTS

Demographics and Disease Characteristics

A total of 937 subjects comprising patients with AR (n= 252), asthma (n= 249), COPD (n= 188) and HCs (n= 248) were enrolled in the study. Different from the other 3 groups, the COPD group was predominantly constituted by men with older age ($p < 0.0001$). The education level was lower in the asthma and COPD groups than in the AR and HC groups. Comorbid diseases existed at a rate of 4.8% among our study groups and hypertension, thyroid and cardiovascular diseases were the most frequent (Table 1). The majority of the patients with AR (41%) had mild intermittent disease (Figure 1). In the asthma group, 32.1% (n= 80) had totally controlled asthma and 49.4% (n= 123) had partially controlled asthma, whereas 18.5% (n= 46) had uncontrolled asthma. In the COPD group, the majority of patients had stage 2 and 3 disease (Figure 1).

The overall response rate to the questionnaire was 99.6% for the first part, 98.3% for the second and 84.7% for the third part.

Smoking Status

In the whole group, 216 (23.1%) subjects were active smokers, 458 people (48.9%) had never smoked and 263 (28.1%) were former smokers (Table 2). The ratio of current smokers was higher in HCs group (35.1%)

Table 1. Demographic features of the study groups

| Demographics | Rhinitis | | Asthma | | COPD | | Healthy controls | | All study groups | | P |
|------------------------|-------------|--------|-----------|--------|------------|--------|------------------|--------|------------------|--------|-------------|
| | N (%) | T= 252 | N (%) | T= 249 | N (%) | T= 188 | N (%) | T= 248 | N (%) | T= 937 | |
| Age [mean ± SM (year)] | 33.9 ± 10.4 | | 48.6 ± 13 | | 64.8 ± 9.3 | | 38.1 ± 13 | | 45.1 ± 16.2 | | < 0.0001* |
| Sex | | | | | | | | | | | < 0.0001** |
| Female | 145 | (57.5) | 206 | (82.5) | 34 | (18.1) | 132 | (53.2) | 517 | (55.2) | |
| Male | 107 | (42.5) | 43 | (17.3) | 154 | (82) | 116 | (46.8) | 420 | (44.8) | |
| None | - | | 17 | (6.8) | 9 | (4.8) | 3 | (1.2) | 29 | (3.1) | |
| Education | | | | | | | | | | | < 0.0001*** |
| Primary school | 32 | (12.7) | 110 | (44.2) | 82 | (43.6) | 35 | (14.1) | 259 | (27.6) | |
| Middle school | 15 | (6) | 19 | (7.6) | 32 | (17) | 11 | (4.4) | 77 | (8.2) | |
| High school | 76 | (30.2) | 55 | (22.1) | 40 | (21.3) | 63 | (25.4) | 234 | (25) | |
| University | 129 | (51.2) | 46 | (18.5) | 25 | (13.3) | 136 | (54.8) | 336 | (35.9) | |
| Occupation | | | | | | | | | | | < 0.0001# |
| House wife | 51 | (20.2) | 139 | (55.8) | 23 | (12.2) | 19 | (7.7) | 232 | (24.8) | |
| Working | 151 | (60) | 71 | (28.5) | 60 | (31.8) | 194 | (78.3) | 476 | (50.8) | |
| Student | 41 | (16.3) | 6 | (2.4) | - | | 18 | (7.3) | 65 | (6.9) | |
| Retired | 8 | (3.2) | 31 | (12.4) | 105 | (55.9) | 17 | (6.9) | 161 | (17.2) | |

* Higher in COPD patients than in patients with AR and HCs.
 ** Females were significantly predominant in asthma group and males were in COPD group when compared to other groups.
 *** Education level was lower in COPD and asthma group than in AR group and HCs.
 # In asthma group, housewives; in COPD group, retired patients; in AR and HCs group, working people were in the majority.

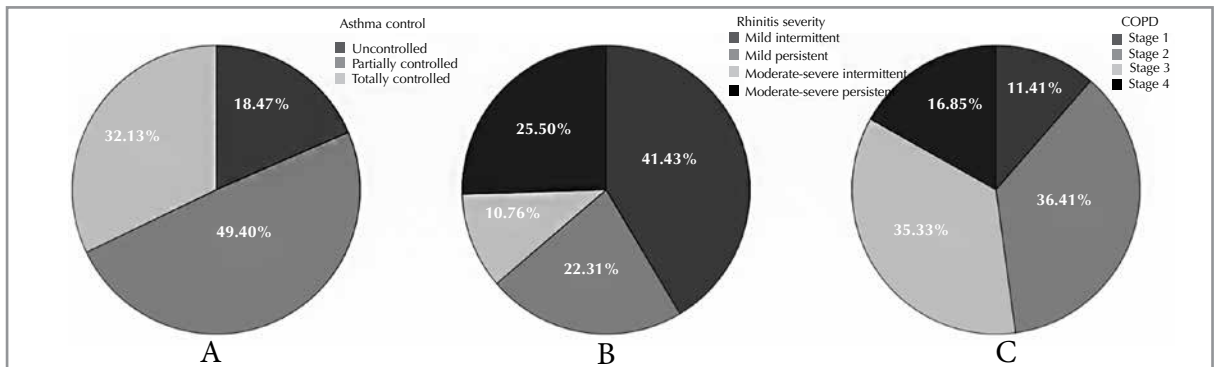


Figure 1. Disease activity and severity of the study groups (A. Asthma, B. Rhinitis, C. COPD).

than in asthma (10.8%), COPD (26.1%), and AR groups (21%) ($p < 0.0001$) (Table 2).

Overall, regardless of the current smoking or quitting status, patients with AR ($n = 109$; 43.3%) smoked similar with asthma and HCs ($n = 87$; 34.9%, $n = 119$; 48%) and lesser than patients with COPD ($n = 164$; 87.3%) (Table 2).

In all groups, men started to smoke earlier and smoked many more cigarettes than the women. The age of

starting to smoke was younger in patients with COPD than in asthmatics and patients with AR, with a mean of 17.6 ± 5.7 years, 20.5 ± 6.1 years and 18.5 ± 5 years, respectively ($p < 0.0001$).

Childhood Exposure to ETS

In the whole study group, during childhood, 61.9% (600/937) of the subjects' parents were smokers, 76% of whom were fathers ($p = 0.001$). The majority of the parents of the patients ($n = 493$; 85%) smoked next to

Table 2. Smoking status of the study groups

| Smoking status | Groups | | | | p |
|-------------------|-------------------|-----------------|---------------|---------------------------|-------------|
| | Rhinitis N (%) | Asthma N (%) | COPD N (%) | Healthy controls N (%) | |
| Active smokers | 53 (21) | 27 (10.8) | 49 (26.1) | 87 (35.1) | < 0.0001* |
| Non smokers | 199 (79) | 222 (89.2) | 139 (73.9) | 161 (64.9) | |
| Never smoked | 143 (56.7) | 162 (65.1) | 24 (12.8) | 129 (52) | < 0.0001** |
| Former smokers | 56 (22.2) | 60 (24.1) | 115 (61.2) | 32 (12.9) | < 0.0001*** |
| Total study group | 252 | 249 | 188 | 248 | |

* Active smokers were higher in HC group than in other groups.
 ** Number of never smoked patients were lower in COPD group than in other groups.
 *** Number of former smokers were higher in COPD group than in other groups.
 HC: Healthy controls, COPD: Chronic obstructive pulmonary diseases.

Table 3. Distribution of the patients according to childhood and current smoking exposure

| | Rhinitis N (%) | Asthma N (%) | COPD N (%) | Healthy controls N (%) | Total |
|--------------------|-------------------|-----------------|---------------|---------------------------|------------|
| Childhood exposure | 128 (88) | 119 (87.5) | 114 (96.6)* | 132 (81.5) | 493 (85) |
| Current exposure | | | | | |
| Home** | 46 (18.3) | 66 (26.5) | 38 (20.2) | 58 (23.4) | 208 (22.2) |
| Work *** | 45 (18.4) | 31 (14.8) | 33 (17.9) | 66 (27.7) | 175 (20) |
| With friends# | 122 (48.4) | 95 (38.5) | 62 (33) | 149 (60.1) | 428 (45.7) |

* Childhood exposure to ETS was higher in COPD group than in other groups (p< 0.0001).
 ** The ratio of people who were exposed to cigarette smoke while at home was significantly higher in patients with asthma vs. AR p= 0.02.
 *** The ratio of people who were exposed to cigarette smoke while at work was significantly high in HCs than asthmatics p= 0.004.
 # The difference between the ratio of people who were exposed to cigarette smoke while with friends was significant between COPD vs. HCs and AR; asthma vs. HCs p< 0.0001.
 ETS: Environmental tobacco smoke, COPD: Chronic obstructive pulmonary diseases, AR: Allergic rhinitis, HCs: Healthy controls.

their children. Patients with AR, have similar childhood exposure to ETS with asthmatics and HCs and all these three groups have lesser exposure to ETS than patients with COPD (Table 3) (p< 0.0001).

Current Exposure to ETS

The ratio of people who were exposed to cigarette smoke while at work or with friends was significantly higher in patients with AR and the HCs (at work for HCs vs asthma p= 0.004; and with friends, between COPD vs. HCs, COPD vs. AR; asthma vs. HCs p< 0.0001) (Table 3).

Attitudes of People Smoking in the Surroundings of Individuals in Our Study Groups

According to the participants responses, 45% of people in the patients’ surroundings showed care about not smoking beside the subjects from whole group.

Avoidance of smoking in the vicinity of our patients by other people was seen to be more in asthma and COPD group than in AR and HCs group (p< 0.0001) (Figure 2).

Attitude of Patients Towards People Who Smoked Near Them

In the whole study group, 63.2% of the patients/individuals warned people not to smoke beside them. This attitude was more predominant among patients with asthma (79.5%), followed by patients with COPD (68.6%), AR (59.1%), and HCs (46.6%) (p< 0.001 HCs vs. other groups).

Cigarette Consumption and Nicotine Dependence Among Groups in Current Smokers and Those Who Had Ever Smoked

In AR group, the mean number of cigarettes smoked per day (n= 10 ± 8.1) was lower than the mean num-

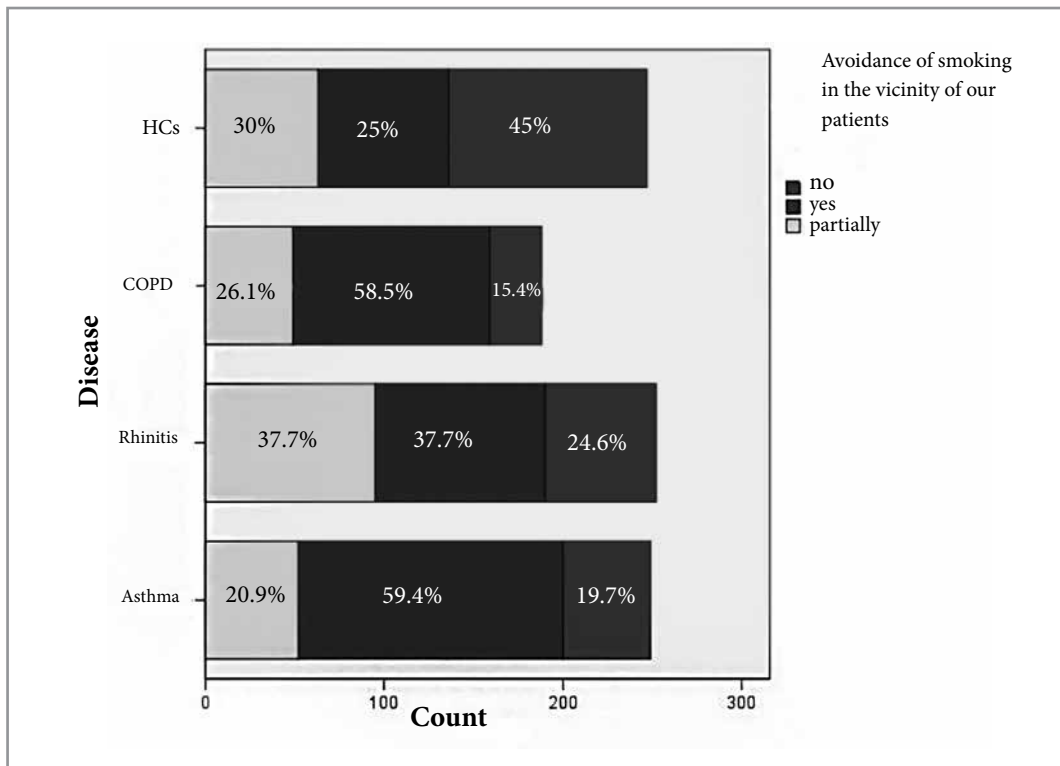


Figure 2. The ratio of the people in surroundings who showed care about not smoking besides the individuals in our study groups.

| | Rhinitis | Asthma | COPD | Healthy controls |
|--|------------|----------|------------|------------------|
| Cigarette consumption (n/per day) | 10 ± 8.1** | 12.5 ± 9 | 23 ± 13.7* | 15 ± 10 |
| Nicotine dependence level median (min-max) | 1 (0-8) | 3 (0-7)# | 4 (0-8)*** | 3 (0-9) |

* Cigarette consumption in COPD > in all groups (p < 0.0001).
 ** Cigarette consumption in rhinitis group was lower than HCs (p = 0.01).
 *** Nicotine dependence level was higher in COPD than all groups (p < 0.0001).
 # Nicotine dependence level was higher in asthmatics than the patients in rhinitis group (p = 0.03).
 COPD: Chronic obstructive pulmonary diseases, HCs: Healthy controls.

ber in the other groups (Table 4). According to the Fagerström Nicotine Dependence Scale results, the median levels of nicotine dependence was significantly higher among the patients with COPD than in the other groups (Table 4).

Perception of the Active Smokers About Quitting Smoking

The rate of willingness to quit smoking was the highest in COPD group (n= 44, 89.8%), followed by patients with AR (n= 39; 73.6%), asthma (n= 18; 69.2%), and

HCs (n= 52; 60.5%), respectively (p= 0.004, between COPD and HCs). While the vast majority of the patients with COPD (n= 30, 66%) wanted to quit smoking within 1 month, patients with AR had not yet decided to set a date but planned to quit in the future (n= 15, 38.5%) or only reduce the number (n=8, 20.5%). Unlike these results, the rate of asthmatics who tried to quit smoking after they learned about of their disease was higher than the rate of patients with AR and COPD (values of 82%, 36% and 53.5% respectively) (p= 0.007).

Factors Related to the Patients' Smoking Behavior

Increased age was the only factor that positively affected the quitting smoking behaviours of the subjects (willing to quit 44.6 ± 14.9 ; unwilling to quit 36.98 ± 12 , $p= 0.001$).

DISCUSSION

The present study novelly provided the smoking behaviours and attitudes of patients with AR and compared with those of patients who had other common lower respiratory tract diseases such as asthma and COPD. In brief, our results showed that despite having a respiratory illness, the smoking behaviors and perceptions of patients with AR differed in some perspectives from those with asthma and COPD. In this sense, we showed that a significant number of patients with AR were active smokers (1 out of 5 subjects). Importantly, all study groups were significantly exposed to ETS during childhood. Considering smoking behaviors of people in the patient's surroundings, while people considered not smoking next to patients with asthma and COPD, particularly those who had quit smoking or had never smoked, interestingly, it seems that they did not behave similarly around patients with AR and the healthy controls. Importantly, despite the rate of quit attempts in all groups was over 50%, the number of failures was quite high among members of the actively smoking group.

According to the results of the Global Adult Tobacco survey 2012, a total of 14.8 million (27.1%) of people in Turkey use tobacco products (15). Men (41.5%) were more likely to smoke tobacco than women (13.1%), and approximately 11.1 million men and 3.6 million women were current smokers in the country (15). In line with this data, in general our results also showed that male subjects smoked more cigarettes and started earlier than female subjects. The mean number of cigarettes smoked per day was 19.2 and the mean age of starting smoking was 17.1 years. Regarding AR, herein, we documented that 1 out of 5 subjects with AR were currently active smokers. However, the rate of active smokers with AR was not as high as that in the COPD or healthy control group, but higher than in the patients with asthma. When the rate of those who had ever smoked was considered, patients with AR seemed to have similar smoking status with healthy controls (almost 4 out of 10 subjects).

Our results emphasized that although higher exposure to ETS in patients with asthma and COPD, all of the study groups including AR group exposed significantly to ETS during childhood. Children who are exposed to cigarette smoke in their homes are likely to have lower lung function at their peak than non-exposed children (16-21). Moreover, they may also have decreased air-flow measures, bronchial hyperresponsiveness, increased respiratory infection and these lung function in early adulthood is associated with COPD and asthma later in life (22-25). On the otherhand, innate immunity is impaired by tobacco exposure as well (26,27). Although several reports exist on ETS as a risk factor for having allergic diseases, scarce information is available regarding allergic rhinitis (8). While, smoking was found not to worsen the symptoms of allergic rhinitis, it has been demonstrated to be a significant related risk of incidence of asthma in patients with AR (8,9). Moreover, there was no evidence that active smoking increased the risk of AR, but a significant relation was reported between passive smoking and AR in a meta-analysis (10). Our results also showed that the majority of patients with AR, exposed to a significant ETS during childhood although not so common as patients with COPD and asthma. More studies are needed to gain insight into the relationship between tobacco smoking and ETS, and the immune response and lower and upper inflammatory respiratory illnesses.

Regarding current exposure to ETS, we had some outstanding data. First, approximately 1 out 5 subjects in all groups were exposed to ETS at home and at work. This is particularly important because exposure to ETS is a common trigger for airway diseases. Smoking indoors was prohibited in Turkey in 2011. This study was performed just after this law was enacted. We may assume that people in Turkey are no longer exposed to ETS owing to the new regulations, which is very important for many patients for preventing the hazardous effects of environmental smoking. Secondly, friends are an important source for providing ETS. Interestingly, this behavior is more prominent among patients with AR and the HCs. Compared to asthma and COPD, people in the surroundings of the patients with AR seem to pay less attention for not to smoke around them. One reason of this less attention could be related to inadequate awareness of AR by the sur-

rounding people. In our study group, a significant number of patients with AR had mild intermittent symptoms; therefore, we may assume that people in their surroundings might not have been aware of the diagnosis of AR and behaved accordingly. Moreover, in contrary to well known relationship between smoking and asthma and COPD, vague knowledge about this topic in AR might lead to this behavior.

Considering the effect of smoking on AR incidence, it seems necessary to inform patients with AR about the harmful effects of active and passive smoking on their health status, to advise them to not to smoke, and to ask people in their surroundings not to smoke near them (9,10).

Similar to previous studies, in our study group, as expected, patients with COPD smoked the highest number of cigarettes per day (5,28,29). Although the number of cigarettes smoked per day and the addiction level was the lowest in the rhinitis group, nearly three quarters of them had tried to quit smoking before but they were unsuccessful; they were still willing to quit smoking but had not yet decided to set a date. Willingness to quit smoking is lower in global adult tobacco research 2012, Turkey than our results. In our study, nearly half of the patients had tried to quit smoking before and this ratio was significantly higher among the asthmatics after they have learned of their disease. Similar to previous studies, we did not find a ratio of patients who sought counselling regarding smoking cessation from a physician, most of our patients quit smoking by themselves (5,30).

Conclusion

Our results showed that the smoking behaviour and perception of patients with AR was different in some perspectives than those of patients with asthma and COPD. First, despite being lower than the public rates, a significant number of the patients with AR still actively smoked, which needs to be focused on. Secondly, the people in their surroundings were adequately aware of the health hazards posed by cigarette smoking in AR, and the patients with AR were currently more exposed to ETS at home and with friends. Thirdly, the patients with AR were less motivated to quit smoking than patients with lower airway disease such as asthma and COPD. Taken together, it would appear necessary to inform patients with AR as well as

the wider community about the health effects of smoking and exposure to ETS on all respiratory tract diseases, particularly in AR, which has a less known association with smoking by the public. Moreover, the high number of patients who currently smoked and high number of quit failures in each group indicates that the strategies to quit smoking particularly in patients with upper and lower respiratory tract diseases should be supported. Although a very meaningful step has been achieved with the prohibition of smoking in indoor environments, considering the fact that childhood exposure to ETS is a common problem in our country in all groups, effective health strategies to eliminate exposure to ETS in the community needs to be implemented, particularly in the family environment.

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