Association between chronic obstructive pulmonary disease and blood types

Kronik obstruktif akciğer hastalığı ile kan grubu arasındaki ilişki

Copd and blood types

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Öz

Amaç: Bu çalışma Şırnak il merkezinde kronik obstruktif akciğer hastalığı (KOAH) olan hastalarda KOAH ile kan grupları arasındaki ilişkiyi ortaya koymak amacıyla yapılmıştır. Gereç ve Yöntem: Şırnak il merkezinde oturan ve 30 yaş üzerinde olan 1000 hastada solunum fonksiyon testleri yapılmıştır. 570 hasta (%57) erkek, 430 hasta (%43) kadın idi. Bulgular: Global Obstruktif Akciğer Hastalığı (GOAH) kriterleri ile birlikte değerlendirildiğinde, KOAH prevalansı %10.1 (101 hasta) olarak saptandı. Hastalık evresi %1.98 hastada hafif, %27.72 hastada orta ve %43.56 hastada şiddetli ve %26.74 hastada ise çok şiddetli olarak saptandı. KOAH çalışmaya katılan erkeklerin %11.92'sinde (68 hasta), kadınların ise %7.67'sinde (33 hasta) saptandı. KOAH tanısı konulan 101 hastadan 93'ünün kan gruplarına hastane kayıtlarından ulaşıldı. Hastalar ABO kan gruplarına göre sınıflandırıldı. Sonuç olarak KOAH en sık olarak A kan grubunda saptandı. ABO kan gruplarına göre KOAH hastalığı olanlarda görülen gruplar şu şekilde idi: A kan grubunda 39 hasta (%42), B kan grubunda 26 hasta (%28), AB kan grubunda 17 hasta (%18) ve 0 kan grubunda ise 11 hasta (%12). Tartışma: Mevcut tıbbi literatürle uyumlu olarak KOAH hastalığı kan grupları ile ilişkili bulunmuştur.

Anahtar Kelimeler

Kronik Obstruktif Akciğer Hastalığı; Kan Grubu; Risk Faktörü

Abstract

Aim: This research was performed on patients diagnosed with chronic obstructive pulmonary disease (COPD) in Şırnak province center to explore the relation between COPD and blood types. Material and Method: Pulmonary function tests were performed on 1000 patients over the age of 30 who were randomly selected from the patients residing in the city center of Şırnak. 570 (57%) of the participants were male and 430 (43%) were female. Results: When combined with the Global Obstructive Lung Disease (GOLD) criteria, the prevalence of COPD was 10.1% (101 patients). Disease stages were mild in 1.98%; moderate in 27.72%; severe in 43.56%; and very severe in 26.74% of COPD patients. COPD was diagnosed in 11.92% (68 patients) of men and 7.67% (33 patients) of women participating in the study. The blood types of 93 patients with COPD from the group of 101 were retrospectively reached from hospital records. Patients were classified according to ABO blood type data. As a result, it was found that COPD was more common in patients with blood type A. According to ABO blood types distribution of our cases with COPD were as follows: 39 patients (42%) were type A, 26 patients (28%) were type B, 17 patients (18%) were type AB and 11 patients (12%) were type O. Discussion: A conclusion is reached revealing the association of blood type with COPD risk factors, which was mentioned in much of the corpus of medical literature.

Keywords

Chronic Obstructive Pulmonary Disease; Blood Type; Risk Factor

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Introduction

Chronic Obstructive Pulmonary Disease (COPD), a common, preventable, and treatable disease, is characterized by persistent airflow limitation that is usually progressive and associated with an enhanced chronic inflammatory response in the airways and the lung to noxious particles and gases. Exacerbations and comorbidities contribute to the overall severity in individual patients [1]. COPD prevalence may vary according to countries, geographical regions, lifestyle, sociocultural structure, age, and sex [2].

Genetic, environmental factors and especially smoking play an important role as COPD risk factors. Many risk factors such as smoking, occupational dust exposure, air pollution, biomass exposure may cause the development of COPD. Atopy, low birth weight, blood type A, non-secretory Ig A deficiency are among the risk factors of COPD [3].

The purpose of this study is to prove an association between blood type and COPD, for although mentioned in the literature as among the risk factors for COPD, there are not enough conclusive studies that establish the relation between blood type and COPD. In our study we presented, in accordance with the literature, that blood type A is seen more commonly among COPD patients than other blood types.

Material and Method

This study was planned randomly in order to investigate which blood type was detected more commonly among COPD patients in Şırnak province center. It was retrospectively performed using the data from the hospital patient records.

The population in our study was composed of 1000 patients who were randomly selected from patients admitted to the hospital and were over 30 years old.

The data for the study was collected between May 2010 and May 2011. We performed the study with a study group of 1000 randomly selected patients. At the same time standardized measurements (respiratory function test, height, weight) were recorded.

Respiratory function tests were performed at least 3 times for each individual and the highest values were recorded. Individuals with obstruction of respiratory function according to GOLD criteria were accepted as COPD [4]. Blood types of patients with COPD were obtained retrospectively from the hospital registry

The obtained data and pulmonary function test values were evaluated by coding in software program "SPSS for Windows version 11.0 (SPSS Inc, Chicago, USA)". Data was presented with mean values and standard deviation (mean ± SD) for the groups. T test was used in the comparison of measurement-based variables between groups for two mediums in the independent groups. A chi-square analysis was performed to examine the distributional differences of categorical variables. Analysis results were evaluated at 95% confidence interval. The level of significance was based on $p < 0.05$ value. Pulmonary function test results were evaluated together with GOLD criteria [4,5].

Results

The study group consisted of 570 males and 430 females. Distribution of individuals by sex, age, height, and body weight characteristics are given in Table 1. Our cases with COPD were mostly GOLD stage 3 (severe COPD) (Table 3). The blood types of 93 patients with COPD from the group of 101 were retrospectively reached from hospital records. Patients were classified according to ABO blood type data. As a result, blood type A was detected most frequently in COPD cases.

In COPD cases; there was no significant difference between Rh + and Rh - (p value: 0.059).

Discussion

This study showed that the prevalence of COPD in Şırnak province center was 10.1% in a population of 30 years old and more. COPD was found in 11,92% of men and in 7,67% of women who participated in our study. It was noteworthy that, while a relationship with blood type A and COPD has been mentioned in previous publications, there was limited evidence of this association in Turkish populations. Among the risk factors of COPD, the blood type association frequently occurs

Table 2. Diagnosis, obstruction parameters of COPD patients in the study group

	Female (COPD female patients) n: 33	Male (COPD male patients) n: 68	Total (COPD cases) n: 101
COPD prevalence	33 (%7.67)	68 (%11.92)	101(%10.1)
Previous COPD diagnosis	11 (%3.9)	19 (%3.3)	30 (%3)

Table 3. Distribution of our cases with COPD according to COPD stages.

	Number	Percentage (%)
Stage 1 (Mild COPD)	2	1,98
Stage 2 (Moderate COPD)	28	27,72
Stage 3 (Severe COPD)	44	43,56
Stage 4 (Very severe COPD)	27	26,74
Total	101	100

Table 4. Distribution of our COPD patients according to ABO blood types.

Blood type A	Blood type B	Blood type AB	Blood type O
39 patients	26 patients	17 patients	11 patients
%42	%28	%18	%12

Table 5. Distribution of our COPD cases by Rh factor.

Rh+	Rh-
49 patients (%52.7)	44 patients (%47.3)

Table 1. General characteristics of the research group.

	Male 570 patients (%57)			Female 430 patients (%43)			Total 1000 (%100)		
	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
Age (Year)	30	89	64.9±16.16	30	77	51.36±14.35	30	89	63.40±15.16
Height (cm)	163	189	167.92±8.78	141	174	155.34±7.24	141	189	166.22±8.20
Body Weight (kg)	53	101	75.4±14.05	40	104	69.7±13.66	40	104	71.9±14.69

in many publications [3,6]. Therefore, we wanted to make up for the lack of studies in our country. In order to reveal scientific data, we conducted this study.

Studies on the epidemiological characteristics of COPD encounter two important problems. One is selection of the observation group and the other one is sampling errors [7,8]. The spirometric criteria on which we base the diagnosis of COPD are the widely accepted GOLD criteria. The most common symptoms of the disease are shortness of breath, chronic cough, and chronic sputum production. Spirometry is necessary for the diagnosis of the disease. In elderly-middle aged adults with chronic symptoms and exposure to risk factors, spirometric findings of airflow obstruction (post-bronchodilator FEV1 / FVC <70%) were confirmed [9].

Özlü and his colleagues investigated the prevalence of COPD in Trabzon in 2004 and in people over the age of 30. This study is one of the first prevalence studies based on the criteria of GOLD and ATS COPD Guidelines. In this study, face to face interviews and respiratory function tests were applied to 613 people over the age of 30 in Trabzon city center and its provinces. The prevalence of COPD was 0.98% according to the GOLD criteria [5]. This rate is 1.7% for males and 0.3% for females. When ATS criteria are considered, the prevalence of COPD is reported to be 4% in males, 1.6% in females and 2.8% in total. The prevalence of COPD found by Özlü and his colleagues is well below both our prevalence findings and the expected prevalence in our country.

The frequency of COPD was assessed in a study conducted in a population between 40-69 years, living in the Konak Health Group in İzmir, between February and May 2003. 1.404 respiratory function tests were performed and at the same time the questionnaire was applied. According to the GOLD criteria, the frequency of COPD was 10.2%, which was reported as 13.3% in men and 7.3% in women [9,10]. The most important risk factor for developing COPD is smoking [11]. Smoking is responsible for 90% of COPD risk in developed countries [3]. In addition to many risk factors such as smoking, occupational dust exposure, air pollution, and exposure to biomass, atopy, low birth weight, blood type A, non-secretory IgA deficiency are also among the risk factors for COPD. These lead to the development of COPD [3,6].

In a study conducted, a 5-year follow-up showed that people with blood type A had an accelerated decline in pulmonary function values compared to people with other blood types [12]. Cohen BH. and colleagues demonstrated and emphasized the association between COPD and blood type [13]. In our study, 11.92% (68 patients) of the participating men and 7.67% (33 patients) of women were found to have COPD. The blood types of 93 patients with COPD from the group of 101 were retrospectively reached from hospital records. Patients were classified according to ABO blood type data. As a result, it was found that COPD was more common in blood type A. Distribution of our cases with COPD according to ABO blood types: 39 were identified as blood type A (42%), 26 as blood type B (28%), 17 as blood type AB (18%) and 11 as blood type O (12%). Our results were in concordance with previous studies, which showed an association with blood type A and COPD. There was no difference in the distribution of our COPD cases with respect to Rh factor.

In many countries, an increase in COPD mortality is observed. The international mortality of COPD varies widely among different countries [14,15]. The reasons for this discrepancy may be differences in smoking behavior, environmental factors, genetic factors, and infections. The data we obtained regarding the prevalence of COPD in Şırnak province center is important for the prevalence statistics of COPD in our country. Even more importantly; our study has significant importance since it constitutes an example for the association of blood type and COPD. Many important publications accept blood type A as a risk factor for COPD [3,6,13]. Therefore, we also aimed to investigate this information. In the data, we obtained; blood type A was the most common group among COPD patients by 42%.

Human Rights Statement:

All procedures performed in this study involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Animal Rights Statement:

Nonapplicable.

Conflict of Interest Statement.

The authors have no conflict of interest

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The authors declare that the**y** are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

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