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Reasons for Postponement and Cancellation of the Procedure in Patients with Bronchoscopy

Bronkoskopi Yapılan Hastalarda İşlemin Ertelenme ve İptal Nedenleri

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Abstract: Bronchoscopy is an invasive procedure enabling to visualize the respiratory tract through an endoscope. The aim of this study was to evaluate the causes for postponement or cancellation of the procedure. This descriptive study was conducted with participation of 80 patients who would have had bronchoscopy in the endoscopy unit of a university hospital between April 2019 and January 2020. The mean age of the patients was 60.8±13.8 years (26-86); 18.8% of patients had bronchoscopy experience. The postponement rate was found 8.1% (n=37) and the cancellation rate was found 9.4% (n=43). The first three causes for the cancellation of the procedure included patients' fear (22.5%), poor overall health status (8.8%) and referral to an alternative procedure (8.8%). It was found after a review on the reasons for cancellation that the first three reasons (respectively) were lack of tests (blood tests, electrocardiography, pulmonary function test, etc.) required before the procedure (11.3%), unstable vital signs (8.8%), and failure to discontinue anticoagulant drug intake (4.9%). It is observed that the bronchoscopy procedure is postponed or cancelled in approximately two out of every ten patients. The physicians and nurses working in bronchoscopy units should determine the preventable causes of cancellation and postponement in patients undergoing bronchoscopy, and provide additional information and reminders to patients for preliminary evaluation in order to prevent cancellation and postponement of the procedure.

Keywords: Bronchoscopy, Patients, Nurses

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Öz: Bronkoskopi, endoskop aracılığıyla solunum yollarının görüntülenmesini sağlayan invaziv bir işlemdir. Bu çalışmanın amacı, işlemin ertelenmesi veya iptal edilmesinin nedenlerini değerlendirmektir. Tanımlayıcı tipteki bu çalışma, Nisan 2019-Ocak 2020 tarihleri arasında bir üniversite hastanesinin endoskopi ünitesinde bronkoskopi olması gereken 80 hastanın katılımıyla yapıldı. Hastaların yaş ortalaması 60,8±13,8 yıl (26-86) ve %18,8'i bronkoskopi deneyimine sahipti. Erteleme oranı %8,1 (n=37) ve iptal oranı %9,4 (n=43) bulundu. İşlemin iptal edilmesinin ilk üç nedeni, hastaların korkusu (%22,5), genel sağlık durumunun kötü olması (%8,8) ve alternatif bir işleme sevk edilmesidir (%8,8). Erteleme nedenleri üzerinde yapılan incelemede ilk üç nedenin (sırasıyla) işlem öncesi gerekli tetkiklerin (kan tahlili, elektrokardiyografi, solunum fonksiyon testi vb.) eksikliği (%11,3), yaşamsal bulguların stabil olmaması (%8,8) %) ve antikoagülan ilaç alımının durdurulmaması (%4,9) olarak belirlendi. Yaklaşık olarak her on hastadan ikisinde bronkoskopi işleminin ertelendiği veya iptal edildiği görülmektedir. Bronkoskopi ünitelerinde çalışan hekim ve hemşireler, bronkoskopi yapılan hastalarda iptal ve ertelemenin önlenebilir nedenlerini belirlemeli, işlemin iptali ve ertelenmesini önlemek için hastalara ön değerlendirme için ek bilgi ve hatırlatmalar yapmalıdır.

Anahtar Kelimeler: Bronkoskopi, Hastalar, Hemşireler

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Introduction

Bronchoscopy is an invasive procedure enabling to visualize the respiratory tract through an endoscope. This procedure is performed for diagnostic and therapeutic purposes (1). Diagnostic bronchoscopy may be performed in cases of suspected malignancy and lower respiratory tract infection, diffuse lung disease, persistent unexplained cough, hemoptysis or stridor, individuals with abnormal lung imaging findings, and lung cancer staging (2). Therapeutic bronchoscopy may also be used in central airway obstruction, presence of foreign material, presence of hemoptysis, abscess drainage/cyst aspiration, bronchial thermoplasty, and difficult airway intubation (1,3,4).

The bronchoscopy procedure of the patient may be postponed in case of thrombocytopenia, changes in blood glucose level, edema on the upper respiratory tract and poor overall health status etc. (5). Furthermore, the procedure may be cancelled if postponement of the procedure was deemed necessary (6). Bronchoscopy procedures can be postponed in some cases (such as no prophylactic drug use, convoluted airway, saturation <90% in room air) at the discretion of the physician (6). Sometimes, patients may cancel endoscopy procedures for personal reasons (request to have the procedure done in another center, late appointment date, etc.) (7). Gulsen et al. (8) reported that the procedure was cancelled because hypotension and bradycardia developed due to anesthesia in one of forty patients who had bronchoscopy. Cancellation of endoscopic procedures both increases the costs and causes time loss (9). Furthermore, it reduces the reproducibility of the physician and causes a negative image for the institution (9,10).

The attempts to reduce cancelled or postponed endoscopic procedures due to the limited number of available endoscopic resources, and uncovering their causes are essential in order to reduce cost inefficiencies in the healthcare system and minimize delays in clinically important examinations (11). Understanding the factors that contribute to patients' delay scheduled endoscopic operations may enable future interventions that may raise the success rate of these procedures (11). The aim of this study was to evaluate the causes for postponement or cancellation of the procedure.

Materials and Methods

Sample

During the 9-month period (April 2019 and January 2020) when the data of the study were collected, a total of 457 patients were treated. Eighty of these bronchoscopy procedures were canceled or postponed. This descriptive study was conducted with participation of 80 patients who would have had bronchoscopy in the endoscopy unit of a university hospital between April 2019 and January 2020. The minimum number of people to be included in the sample was calculated as 74 by predicting the endoscopy cancellation rate (14%) (13), the confidence level of 95%, and the margin of error of 5%.

Adult patients who would have had elective bronchoscopy for various indications and volunteered to participate in the study were included in the study.

Data Collection Tools

A "Patient Introduction Form" was used for data collection. The form including 9 questions was prepared by the researchers in line with the literature (9,10,13), and the individual characteristics (age, gender, education level and presence of chronic disease) and bronchoscopy-related characteristics (lung cancer history, procedure indication and bronchoscopy experience, bronchoscopy procedure postponement and reason, bronchoscopy procedure cancellation status and reason).

If the procedure was postponed to a further date, it was accepted as postponement of the bronchoscopy. If the procedure was cancelled on the premise that the procedure would not be performed again, this was accepted as the cancellation of bronchoscopy.

Data Collection

The reasons that have caused postponement/cancellation of the bronchoscopy procedure were detected personally or via phone call. The questions in the Patient Introduction form were asked to the patients whose bronchoscopy was postponed or cancelled on the day of the procedure and they were asked to

answer them. The patients who have not/could not come to the procedure were contacted via phone calls. After informing the patients about the study over the phone and verbal consent to participate in the study, they were asked to answer the questions in the form.

Statistical Analysis

The analysis of the data was performed on IBM SPSS 20.0 package program. The data were identified in frequency, percentage, mean and standard deviation. A p value below 0.05 ($p<0.05$) was accepted as statistically significant.

Ethical Considerations

Approval of the ethics committee (2019/91-04/24) from the Scientific Research Ethics Committee of the university, institutional permissions from the institute (28999038-600E326123) was obtained and informed voluntary consent from the patients were obtained.

Results

The mean age of the patients was 60,8±13,8 years (26-86); 70,0% (n=56) were male and 87,5% (n=70) were primary school graduates, 18,8%; one of them had bronchoscopy experience (n=15). The rate of at least one chronic disease was 67,5% (n=54) (Table 1).

Table 1. Characteristics of patients and status of postponements/cancellations of their procedures (n=80).

Characteristic		**n**	**%**	**Postponement (n=37)**	**Cancellation (n=43)**
Ageyear	60<	31	38,8	10	21
	60≥	49	61,2	27	22
Gender	Female	24	30	11	13
	Male	56	70	26	30
Education level	Primary school	70	87,5	32	38
	High school	4	5,0	3	1
	University	6	7,5	2	4
Presence of chronic disease	Yes	54	67,5	26	28
	No	26	32,5	11	15
Lung cancer history	Yes	21	26,3	10	11
	No	59	73,8	27	32
Bronchoscopy experience	Yes	15	18,8	8	7
	No	65	81,2	29	36
Procedure indication	Diagnostic	78	97,5	37	41
	Therapeutic	2	2,5	0	2

It was determined during the data collection period that bronchoscopy procedure was planned for 457 patients and 17,5% (n=80) of these patients were postponed or cancelled. Overall, the postponement rate was found 8,1% (n=37) and the cancellation rate was found 9,4% (n=43). Evaluation of 80 patients revealed that bronchoscopy cancellation rates were more (53,8%).

The first three causes for the cancellation of the procedure included patients' fear (22,5%), poor overall health status (8,8%) and referral to an alternative procedure (8,8%).

It was found after a review on the reasons for delay that the first three reasons (respectively) were lack of tests (blood tests, electrocardiography, pulmonary function test, etc.) required before the procedure (11,3%), unstable vital signs (8,8%), and failure to discontinue anticoagulant drug intake (4,9%).

Discussion

It was determined in this study that the bronchoscopy procedure was postponed or cancelled in 17,5% of the patients whereas Sheikh et al. (10) determined that the procedure was cancelled in 6,7% of colonoscopy patients. Nakagawa et al. (9) detected in their study that bronchoscopy procedures were cancelled at a rate of 2,3%. The procedure cancellation rate was reported as 1,7-28% in studies conducted with the participation of patients who had colonoscopy (14, 15). It was determined that the rate of cancellation in diagnostic and therapeutic procedures on outpatient basis such as endoscopy and PET, CT varies between 1% and 3,7% (9). Alnasser et al. (7) found in their study that the rate of appointments cancelled in endoscopy units was 16%. The results of the study reveal that endoscopic procedures are cancelled at different rates.

The lack of required tests (11,3%) before bronchoscopy was determined as the most important reason for delays. Since lower platelet count increase the risk of bleeding after the procedure, blood analyses before the procedure are important (16). A certain level of platelet values especially for bronchoalveolar lavage and endobronchial biopsy procedures is a condition, and the procedure may be performed orally in patients with thrombocytopenia (17). It is important to apply routine and procedure-specific tests and to evaluate the results before the procedure in order to perform bronchoscopy procedures safely and to prevent complications.

The instability of vital signs in 8.8% of the patients was determined as one of the reasons for bronchoscopy in this study; however, it was reported in the studies conducted by Abul and Çetinkaya (18) that the bronchoscopy procedure was postponed in patients with a pre-procedural PaO2 value below 90% in patients undergoing bronchial thermoplasty. Mohan et al. (19) reported that blood pressure increased with the procedure (5th and 10th minutes), heart rate increased, and saturation decreased when compared to before bronchoscopy (19). Monitoring of the blood pressure, heart rate, oxygen saturation before, during and after the procedure in all patients who will have bronchoscopy was suggested at an evidence level of D. In addition, it is emphasized that optimization of pre-procedural oxygen saturation is an important step to prevent complications due to hypoxia (Grade D) (20). Considering that vital signs may change in bronchoscopic procedures, optimization before the procedure is essential.

It was found that the procedure was postponed due to not discontinuation of the anticoagulant drug intake in 4,9% of the patients. Ensuring pre-procedural control of antithrombotic/anticoagulant drugs is one of the preparatory steps for the safety of the endoscopy procedure (21). Particular care should be exercised for procedures that carry a higher risk for bleeding such as transbronchial cryobiopsy or endobronchial cryobiopsy (22). Even minimal bleeding in bronchoscopic procedures may fill the tracheobronchial tree and cause respiratory failure. An individualized approach should be exhibited by prioritizing patient safety (23).

It was detected in the research that fear of the procedure was the first reason for cancellation with a rate of 22,5%; however, Alnasser et al. (14) determined that 7,3% of the patients cancelled their appointments due to fear or did not come to their appointments in endoscopic procedures. Sheikh et al. (9) found that 6.5% of patients who had colonoscopy cancelled the procedure because of procedural fear. It was determined in another study that 11% of patients who underwent gastrointestinal endoscopy cancelled their procedures for fear of complications (11). It is detected that patients have fear before the procedure and this situation causes the cancellation of the procedure.

It was determined in the study that 8,8% of the patients could not undergo bronchoscopy because of their poor general condition before the procedure. Alnasser et al. (7) reported that 16% of patients who would have endoscopy do not attend or cancel their appointments due to health problems. Souma et al. (24) stated that bronchoscopy procedures of patients whose general condition deteriorated due to oncological treatment could be cancelled. Olds et al. (11) found in their study that most of the patients who underwent endoscopy cancelled the procedure because of acute medical health problems. Smith et al. (15) reported that worsening of the current health condition has a share of 7% in colonoscopy cancellations. Partin et al. (25) determined that the patient's limited overall life expectancy was a factor that predicted failure to attend

a colonoscopy appointment. According to the results of the research, it may be said that a negative change in the general condition causes cancellation of the endoscopic procedure.

Referral to an alternative procedure was detected as one of the most common reasons for bronchoscopy cancellations (8,8%). Similarly, Semaan et al. (26) reported that the nodules were partially or completely eliminated by computed tomography before the procedure in 6,9% of the patients, so the procedure of the patients who were planned to have electromagnetic navigation bronchoscopy was cancelled. It seems from this point of view that sometimes the necessity of bronchoscopic procedures may be eliminated by using alternative diagnostic methods.

Limitations of the study

However, this study is the first in the national literature to reveal the reasons for cancellation and postponement in patients undergoing bronchoscopy.

Conclusion

It is observed that the bronchoscopy procedure is postponed or cancelled in approximately two out of every ten patients. The physicians and nurses working in bronchoscopy units should determine the preventable causes of cancellation and postponement in patients undergoing bronchoscopy, and provide additional information and reminders to patients for preliminary evaluation in order to prevent cancellation and postponement of the procedure. Furthermore, the importance of possible situations that may arise if the process is not carried out should be emphasized and their awareness should be increased and awareness should be raised.

Ethic Declaration: Ethical permission was obtained from the Trakya University, Medical Faculty Scientific Research Ethics Committee for this study with date 25.02.2019 and number 04/25, and Helsinki Declaration rules were followed to conduct this study.
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