

Is There Any Effect of Music on Pain Perception During Cystoscopy Under Local Anaesthesia?

Lokal Anestezi Altında Yapılan Sistoskopi Esnasındaki Ağrı Algısı Üzerine İşlem Sırasında Dinletilen Müziğin Olumlu Etkisi Var mı?

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ABSTRACT Objective: The aim was to determine the factors that effect pain perception in men underwent cystoscopy under local anaesthesia and to evaluate the effect of music on pain. **Material and Methods:** Fifty-six male patients underwent rigid cystoscopy between June and December 2013 were enrolled the study. The patients who need additional procedures like J-J catheter extraction, internal urethrotomy, cold cup biopsy and fulguration were excluded in the survey. Cystoscopy was performed after 15 minutes following 2% lidocain gel use. 20 Fr rigid cystoscope used as panendoscopy. Age, prostate volume, previous number of cystoscopic evaluation, procedure duration were recorded to evaluate their effects on pain. Patients were divided in two groups. Group 1: patients listened to classical music, Group 2: without music. Cystoscopy was performed similarly to all patients. Visual Analog Pain Scale (VAS) ranging from 0 to 10 was applied to assess pain perception. Statistical differences between the groups were assessed with SPSS 16.0. **Results:** Mean age, procedure duration time, previous number of cystoscopic evaluation, insertion pain score and pain score during procedure were 66.6 years, 5.1 minutes, 4.66, 1.2 and 1.9 respectively. We could not find any significant effect of age, prostatic enlargement, listening to music and procedure duration time on pain perception. Number of cystoscopy was related to pain reducing only at insertion. **Conclusion:** The effect of age, duration of procedure, music and prostatic enlargement on pain perception could not reach statistically significant levels. The insertion of the device can be more painful in first cystoscopic experience than recurrent ones.

Key Words: Cystoscopy; music; pain perception; anesthesia, local

ÖZET Amaç: Bu çalışmada lokal anestezi altında yapılan sistoskopi esnasında hissedilen ağrı algısını etkileyen faktörleri incelemeyi ve müziğin ağrı üzerindeki etkisini değerlendirmeyi amaçladık. **Gereç ve Yöntemler:** Haziran-Aralık 2013 tarihleri arasında lokal anestezi altında tanısal sistoskopi yapılan 56 erkek hasta çalışmaya dahil edildi. J-J kateter çekimi, internal üretrotomi, biyopsi gibi ek girişim gerektiren hastalar çalışmadan çıkarıldı. Sistoskopi %2'lik lidokain içeren jel üretra içine uygulandıktan 15 dakika sonra 20 Fr rijit sistoskop kullanılarak yapıldı. Anterior üretra, prostatik üretra ve mesane içerisi değerlendirildi. Hastaların yaş, prostat hacmi, önceki sistoskopi sayıları, sistoskopi süreleri kaydedildi. Hastalar işlem esnasında müzik dinletilenler ve dinletilmeyenler olarak iki gruba ayrıldı. Giriş esnasındaki ve işlem esnasındaki ağrı algısı Vizüel Ağrı Skoru (VAS) ile 0 ile 10 puan arasında değerlendirildi. İstatistiksel değerlendirme SPSS 16.0 (SPSS Inc, Chicago, Illinois, USA) ile yapıldı. P<0.05 olması istatistiksel olarak anlamlı kabul edildi. **Bulgular:** Ortalama yaş 66.6 yıl, ortalama sistoskopi süresi 5.1 dakika, önceki sistoskopi sayısı 4.66, giriş esnasındaki ağrı skoru ortalaması 1.2, işlem esnasındaki ağrı skoru ortalaması 1.9 idi. Hastaların yaş, prostat boyutu, müzik dinletilmesi ve sistoskopi süreleri arasında ağrı algısı açısından bir fark bulunamadı. Sadece sistoskopi sayısı arttıkça giriş esnasındaki ağrının azaldığı görüldü. **Sonuç:** Yaş, sistoskopi süresi, müzik dinletilmesi ve prostat büyümesinin lokal anestezi altındaki ağrı algısına etkisi görülmedi. Sistoskopi sayısı arttıkça girişime alışmakla ağrı algısının azaldığı görüldü.

Anahtar Kelimeler: Sistoskopi; müzik; ağrı algısı; anestezi, lokal

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Cystoscopy is one of the most used diagnostic tools in urology practice. Especially in busy clinics, it is usually performed as an outpatient procedure. Although intraurethral local anesthesia with 2% lidocain gel before the procedure remains to be a widely used and effective technique, the patients usually have considerable fear and anxiety.¹ Pharmacokinetically, absorption of topical lidocaine is slow, with peak levels reached at approximately 15 to 60 minutes. In most studies, the time elapsed from the application of topical anaesthetic gel to the tolerance of cystoscope insertion has been reported to be 15 to 20 minutes.^{2,3} However, this is a long time to wait and increases the patient's anxiety. High level of anxiety before cystoscopy can lead discomfort and increased pain perception during the procedure. In the recent era, music as a non-pharmacological treatment for pain and anxiety before surgical interventions became popular and some studies evaluated effects of musical interventions upon pain perception and reported that pleasant or cheerful music decrease perceptions of pain and discomfort.^{4,5}

The aim of our study was to determine the factors that effect pain perception in men undergoing cystoscopy under local anaesthesia and to evaluate the effect of music on pain perception.

MATERIAL AND METHODS

After taking local ethic committee approval and the patient's informed consent, 56 male patients who underwent rigid cystoscopy as an outpatient procedure between 1st of June 2013 to 30th of December 2013 were enrolled to the study. Patient age, prostatic volume measured with transabdominal ultrasound, previous number of cystoscopic evaluation, and benign prostatic obstruction, procedure duration was recorded to evaluate their effects on pain. The patients were asked if they wanted to listen to classical music during the procedure and two groups were made according their answers as Group 1: Patients who listened to classical music before and during the standard cystoscopy procedure and Group 2: Patients who did not listen to music.

The patients who needed additional procedures like J-J catheter extraction or insertion, internal urethrotomy, cold-cup biopsy and fulguration were excluded from the survey. Cystoscopy was performed after administering the same amount of 2% lidocain gel to the urethra and waiting for 15 minutes for local anaesthesia. 20 Fr rigid cystoscope was used for panendoscopy. Anterior urethra, prostatic urethra, prostate and intravesical area were observed.

Visual Analog Pain Scale (VAS) ranging from 0 to 10 was applied to assess patients' pain perception during the insertion of cystoscope and subsequent cystoscopic evaluation.

Statistical analyses were performed using SPSS™ version 16.0 (SPSS Inc, Chicago, Illinois, USA). $P < 0.05$ was accepted for significance threshold. Mann Whitney U test, independent sample's t test and Linear regression analyses were used for evaluating the factors that effect pain scores.

RESULTS

Mean age was 66.6 years (26-89), mean previous number of cystoscopic evaluation was 4.66 (1-10) times, mean insertion pain according to VAS was 1.2 (0-7) and mean pain during procedure was 1.9 (0-8).

The age was divided into ≥ 65 and < 65 then analysed for pain perception at insertion and during procedure. 21 patients were younger than 65 years and their mean insertion pain score was 1.3 and mean procedure pain score was 2.1. Remaining 35 patients were ≥ 65 years old and their mean insertion pain score was 1.2 and mean procedure pain score was 1.7. Although less pain scores were seen in elder group we could not find any statistically significant difference between two age groups for insertion pain scores ($p:0.761$) and procedure pain scores ($p:0.521$) (Table 1).

Nineteen of 56 patients (33.9%) undergone this procedure for the first time and remaining 37 (66.1%) undergone recurrent cystoscopic evaluation. According to insertion pain scores, number of cystoscopy was related to pain. The patients felt more pain at insertion if they had the procedure

TABLE 1: VAS scores of age groups. Statistically significant p value is <0,05. No statistically significant difference was found.

	Age	N	Mean	Standard Deviation	Standard Error Mean	p
Pain at insertion	<65	21	1.3333	1.46059	0.31873	0.761
	≥65	35	1.2000	1.64138	0.27744	
Pain during procedure	<65	21	2.1429	1.87845	0.40991	0.521
	≥65	35	1.7714	2.19740	0.37143	

TABLE 2a: Pain scores of cystoscope insertion and number of previous cystoscopy history. Correlation is significant at the 0.05 level (2-tailed). Statistically significant difference was found between one and more cystoscopy.

		How many times of cystoscopy	Pain during cystoscopy
How many times of cystoscopy	Pearson Correlation	1	-0.308*
	Sig. (2-tailed)		0,021*
	N	56	56
Pain during cystoscopy	Pearson Correlation	-0.308*	1
	Sig. (2-tailed)	0,021*	
	N	56	56

TABLE 2b: Pain during procedure and number of cystoscopy. Correlation is significant at the 0.05 level (2-tailed). No statistically significant difference was found.

		How many times of cystoscopy	Pain during cystoscopy
How many times of cystoscopy	Pearson Correlation	1	-0.168
	Sig. (2-tailed)		0.215
	N	56	56
Pain during cystoscopy	Pearson Correlation	-0.168	1
	Sig. (2-tailed)	0.215	
	N	56	56

first time (Table 2a). But there was no relation between procedure pain scores and number of previous cystoscopic evaluations (Table 2b).

We found prostatic obstruction in 21 patients (38.9%) at cystoscopy and all of them had 50 cc or greater prostatic volume measured with transabdominal ultrasound. We found that prostatic obstruction did not effect the pain scores at insertion and during procedure (p:0.573 and p:0.251) (Table 3).

When the patients evaluated according to music application, no statistically significant difference between two groups in any part of the procedure was detected (p:0.174 and p:0.567) (Table 4).

Mean duration time of procedure was 5.1±2.4 minutes.

DISCUSSION

Cystoscopy is an indispensable diagnostic procedure in urology practice. It is probably the most common surgical approach in urology clinics. It is generally advised to be administered under general anaesthesia. If it is performed under local anaesthesia flexible cystoscope devices can be used due to

TABLE 3: Prostatic obstruction and pain scores. Statistically significant p value is <0,05. No statistically significant difference was found.

	Prostatic obstruction	N	Mean	Standard Deviation	Standard Error Mean	p
Pain at insertion	(-)	21	1.1429	1.15264	0.25153	0.573
	(+)	33	1.3939	1.80172	0.31364	
Pain during procedure	(-)	21	1.5714	1.66046	0.36234	0.251
	(+)	33	2.2424	2.29170	0.39893	

TABLE 4: The effect of music on pain. Statistically significant p value is <0,05. No statistically significant difference was found.

	Music	N	Mean	Standard Deviation	Standard Error Mean	p
Pain at insertion	(-)	28	1.5357	1.73167	0.32725	0.174
	(+)	28	0.9643	1.34666	0.25449	
Pain during procedure	(-)	28	2.0714	2.22658	0.42078	0.567
	(+)	28	1.7500	1.93649	0.36596	

minimize patient anxiety and discomfort of the procedure.⁶ But in the clinics with high patient volume and in the patients who are not suitable for general anaesthesia, cystoscopy has to be administered under local anaesthesia as an outpatient procedure with 2% lidocain gel. There are some studies about feasibility of outpatient rigid cystoscopy.⁷⁻⁹ In some studies, local anaesthetic gel maintenance time was recommended to be at least 15 minutes to minimize the pain perception and improve tolerance of the cystoscope.¹⁰ We also used 2% lidocain gel instillation to urethra and waited 15 minutes before insertion of the rigid cystoscope to all patients as recommended.

We evaluated the effect of patients' age on pain perception. VAS scores were analyzed for two previously described age groups. In our survey patients who were enrolled to ≥ 65 years group had less pain scores but the results were not statistically significant (1.2 vs 1.3 $p > 0.05$ for insertion of cystoscope and 2.1 vs 1.7 $p > 0.05$ during subsequent procedure). According to these results we concluded that age does not probably have important effect on pain. But it should be kept in mind that cystoscopic evaluations in younger men under local anaesthesia are tend to be more painful and thus general anaesthesia must be considered as a more logical option.

Benign prostatic hyperplasia is very common disease among older people.¹¹ We evaluated the effect of prostatic enlargement on pain perception and discomfort during cystoscopy. When we compared the patients with and without prostatic enlargement although the patients with prostatic enlargement felt some more pain at insertion and during cystoscopy (1.3 vs 1.1 $p > 0.05$ at insertion and 2.2 vs 1.5 $p > 0.05$) the data did not show any statistically significance. But we concluded that general anaesthesia is a logical option in patients who had obstructive and big prostate especially due to difficulty and pain associated with the procedure.

There are a lot of studies that emphasize the importance of preoperative anxiety and its togetherness with pain. Additionally, Ozdemir et al

showed that to inform about procedure before it decreased pain level.¹² In addition music therapy has been used with notable success to counter preoperative anxiety.^{13,14} Hsiao and Hsieh described the utility of music therapy to reduce acute pain experienced during wound care.¹⁵ Several regions in the limbic and paralimbic systems, which are centers of affective pain, show notable changes associated with listening music.¹⁶ Besides these, there are some studies about the effect of music to cystoscopy procedures.^{17,18} Yeo et al. randomized the patients who underwent to rigid cystoscopy into two groups, patient who are exposed to music and who are not. He found that listening music during rigid cystoscopy significantly reduced feeling of pain, discomfort, and dissatisfaction.¹⁷ In our study although the patients who were exposed to music felt also less pain (0.9 vs 1.5 $p > 0.05$ at insertion and 1.7 vs 2 $p > 0.05$ during cystoscopy), we could not achieve such statistically significant results. In Yeo et al.'s study, patients had the chance to prefer a specific music type but in our study all of our patients exposed to classic music. Another confounding factor may be the use of fine cystoscopes in their study. These differences may explain the variation. We also agree with the positive effect of the music to reduce pain and anxiety level during rigid cystoscopy under local anaesthesia.

Mean duration time of procedure was 5.1 ± 2.4 minutes and it did not effect the pain perception in our study ($p > 0.05$) and these results were comparable with Yeo et al.'s study.

In this study we found that number of previous cystoscopic evaluations was the only affecting factor of pain perception during insertion of the cystoscope but it was not an affecting factor for the subsequent procedure. In other words number of previous cystoscopy was found as an independent factor for pain in our patients according to pearson correlation ($p = 0.0021$). A study from Turkey revealed that previous cystoscopy experience decreased pain level.¹² The VAS scores were higher at first cystoscopies than recurrent ones in our study. The reason might be orientation of patients to cystoscopy.

Our patients felt less pain during the insertion of the device afterwards pain increased a little bit during the subsequent procedure. This result was logical because passage of a rigid device through a long, curved urethra and prostatic zone probably induce more pain and discomfort. These pain levels achieved by enough intraurethral anaesthetic gel duration time are very acceptable for a cystoscopy procedure.

Our results about VAS levels are similar to the other previously published studies.^{7,9,18}

The limitations of our study can be low num-

ber of patients, used only one kind of music and patients' anxiety level was not evaluated.

CONCLUSION

Outpatient rigid cystoscopy in men can be performed under local intraurethral anaesthesia with acceptable pain perception. The effect of patient's age, duration of procedure, listening to music and prostatic enlargement on pain perception could not reach statistically significant levels. The insertion of the device and the first part of the procedure can be more painful in first cystoscopic experience than recurrent ones.

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