

Listening to Music During Cystoscopy Decreases Anxiety, Pain, and Dissatisfaction in Patients: A Pilot Randomized Controlled Trial

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Abstract

Purpose: To determine whether listening to music during cystoscopy decreases anxiety, pain, and dissatisfaction among patients and results in a more comfortable and better-tolerated procedure.

Materials and Methods: Seventy male patients who underwent rigid cystoscopy between May 2011 and December 2011 were randomized into the following: no music (Group I, $n=35$) or classical music during procedure (Group II, $n=35$). Before cystoscopy, lidocaine gel was instilled in the urethra, and both groups viewed their procedures on a video monitor. Anxiety levels were quantified according to the State-Trait Anxiety Inventory. A visual analog scale (0–10) was used for a self-assessment of satisfaction, discomfort, and willingness among patients to repeat the cystoscopy.

Results: Demographic characteristics, mean age, procedure duration, and procedure indications were statistically similar between the two groups. The mean anxiety level and mean pain score of Group II were significantly lower than those of Group I ($p<0.001$ for both). Group II also carried a significant greater mean satisfaction score compared with Group I ($p<0.001$). Statistically significant differences were detected between groups in the postprocedural pulse rate and the systolic blood pressure ($p=0.012$ and $p=0.008$, respectively), whereas pre-procedure pulse rate and systolic blood pressure were similar.

Conclusions: Listening to music during rigid cystoscopy significantly reduces feelings of pain, discomfort, and dissatisfaction. Music can serve as a simple, inexpensive, and effective adjunct to sedation during cystoscopy. We recommend the application of music during rigid cystoscopy for clinical use.

Introduction

CYSTOSCOPY IS A common outpatient urologic clinical examination, but it is somewhat painful for patients and often causes feelings of fear and anxiety before the procedure. A flexible cystoscope is available for outpatient procedures, but rigid cystoscopies remain more common in Korea owing to their lower expense, more facile handling, and improved visual field.¹ Therefore, methods to reduce pain, fear, and anxiety in patients who undergo rigid cystoscopy are needed.

Various anesthetic techniques have been used for rigid cystoscopy, such as urethral lubrication, an intraurethral lidocaine injection, or premedication with a short-acting intramuscular narcotic.² However, none of these approaches are sufficient to relieve pain, fear, and anxiety in patients during the procedure. Nonpharmacologic alternative treatment modalities also can be considered.³

Music is an established complementary treatment for several diseases that allows for the reduction of pharmacological treatments to sedative doses.⁴ The use of music to promote relaxation has a long history in medicine,^{5,6} and music is a low-cost and harmless addition to clinical settings that evokes measurable reductions in pain and anxiety. To our knowledge, no study has investigated whether music decreases perceptions of pain and anxiety among patients undergoing rigid cystoscopy. The present study exposed patients to classical music during office-based rigid cystoscopy and evaluated the patients' feelings of pain and anxiety.

Materials and Methods

Patients and cystoscopy procedure

From May 2011 to December 2011, 70 male patients who underwent rigid cystoscopy for the first time were selected for

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this study and were block-randomized into two groups: 35 patients in Group I wore a headset without music during the procedure, and 35 patients in Group II listened to classical music via a headset. Our inclusion criteria were male gender and age >20 years. Exclusion criteria included lidocaine allergy, inability to comply with the experimental methods, urinary tract infection, anatomical problems with the urethra, and any analgesic use during the 24 hours before cystoscopy. The same surgeon performed all cystoscopies on patients placed in the dorsal lithotomy position, and no additional manipulations were performed (e.g., stent removal or bladder biopsy). Before each cystoscopic examination, the penis was disinfected with povidone-iodine, and ~10 mL of 2% lidocaine jelly was instilled intraurethraly. The lidocaine jelly was maintained for 15 minutes using an occlusive penile clamp at the tip of the penis that was fastened immediately after lidocaine injection. Classical music began playing in the headsets of Group II patients before disinfection and lidocaine gel injection, and music played throughout the rigid cystoscopy procedure. All patients viewed their procedures on a video monitor during the procedure, and the surgeon briefly mentioned each step in the process as it was being performed (i.e., instillation of analgesic, insertion of scope, and intravesical scoping).

Analysis of pain and anxiety

We measured anxiety levels with the State-Trait Anxiety Inventory, a self-assessed anxiety inventory comprised of two subscales of 20 multiple-choice questions each. The anxiety inventory sums to a score of 20–80, with larger scores indicating greater anxiety levels. Immediately after the cystoscopic examination, patients self-reported their satisfaction, pain, and ability to tolerate a repeated cystoscopy according to a visual analog scale (0–10). The following pain- and anxiety-associated physiological functions also were assessed: hemodynamic values; mean arterial pressure; and heart and respiration rates. Statistical significance was determined using an independent *t*-test and Pearson's chi-squared test. Significance was assessed for $p < 0.05$.

Results

Patients in Groups I and II had similar mean ages (49.1 and 47.3 years, respectively; $p = 0.532$). Both groups were similar

TABLE 1. SUMMARY OF PATIENT CHARACTERISTICS AND PREPROCEDURAL STATUS

	Group I (n=35)	Group II (n=35)	p-Value
Age (years)	49.1 ± 13.5	47.3 ± 15.3	0.532
Reasons for cystoscopy (n)			0.326
Gross hematuria	10	11	
Microscopic hematuria	18	15	
Lower-urinary-tract symptoms	5	9	
Suspicious bladder stones	2	0	
Preprocedure			
Pulse (beats/min)	67.1 ± 8.9	65.3 ± 7.3	0.183
Systolic pressure (mm Hg)	123.5 ± 18.1	121.4 ± 15.2	0.089

TABLE 2. PAIN, ANXIETY, WILLINGNESS TO UNDERGO THE PROCEDURE, AND SATISFACTION DURING CYSTOSCOPIC EXAMINATION POSTPROCEDURE

	Group I (n=35)	Group II (n=35)	p-Value
Duration of procedure (min)	5.29 ± 1.5	5.34 ± 1.3	0.833
Postprocedure			
Pulse (beats/min)	75.5 ± 5.8	71.5 ± 6.1	0.012
Systolic pressure (mm Hg)	130.2 ± 17.5	125.3 ± 13.2	0.008
Mean pain score (VAS)	7.34 ± 3.2	4.14 ± 2.1	< 0.001
State-Trait Anxiety Inventory	48.2 ± 4.2	37.4 ± 3.4	< 0.001
Willingness to undergo the procedure (VAS)	4.86 ± 2.1	7.31 ± 1.8	< 0.001
Satisfaction (VAS)	4.67 ± 2.3	7.12 ± 2.2	< 0.001

VAS, Visual Analog Scale.

with regard to reasons for undergoing cystoscopy ($p = 0.463$). The most common reason was microscopic hematuria, followed by gross hematuria, lower-urinary-tract symptoms, and suspicious bladder stones on radiologic images. No significant differences were detected between the two groups regarding preprocedural hemodynamic parameters, including pulse rate and systolic blood pressure ($p = 0.183$ and $p = 0.089$, respectively; Table 1).

Procedure durations also were statistically similar for both Group I (5.29 minutes) and Group II (5.34 minutes) ($p = 0.833$). After cystoscopy, the mean anxiety scores in Groups I and II differed significantly (48.2 and 37.4, respectively, $p < 0.001$). The mean satisfaction score of Group II was significantly higher (7.12) compared with Group I (4.67; $p < 0.001$), and the mean pain score for Group II (4.14) was significantly lower than for Group I (7.34, $p < 0.001$). The mean postprocedural pulse rates and systolic blood pressures for Group I were significantly higher than for Group II ($p = 0.012$ and $p = 0.008$, respectively), and Group II was significantly more willing to undergo a repeat cystoscopy than Group I ($p < 0.001$) (Table 2).

Discussion

Urethral pain associated with rigid cystoscopy and a patient's associated anxiety may contribute to the incidence of incomplete cystoscopic examinations and patient noncompliance.² Several anesthetic treatments are available to make rigid cystoscopy more tolerable.⁷ For instance, a lubricating jelly containing 2% lidocaine often is applied before any placement of transurethral instrumentation.⁷ However, topical lidocaine is absorbed slowly and incompletely.⁷ Previous reports^{8,9} suggest that lidocaine is maximally absorbed at 15–60 minutes. In the present study, lidocaine gel was maintained in the urethra for a minimum of 15 minutes. Despite effective anesthesia and lubrication, patients may continue to experience pain during rigid cystoscopy,² and this can correlate with anxiety levels during the procedure. In turn, increased anxiety augments the perception of pain.¹⁰ During procedures involving sedation–analgesia when the patient is awake, feelings of pain, immobilization, and unease due to visual and auditory stimuli may augment anxiety levels.^{11,12}

As an alternative treatment modality, music reduces perceptions of discomfort by activating the cingulofrontal cortex, which functions in attention shifting¹³ and pain modulation.¹⁴ Clinical reports suggest that music improves psychological and physiologic parameters.¹⁵ Music also has anxiolytic effects and has been applied to ameliorate stressful interventions.¹⁵ During laceration repair, for instance, the incorporation of music decreased pain and allowed for reduced doses of coadministered sedatives and analgesics.¹⁶ Music therapy has broad applications to acute- and chronic-pain treatments.¹⁷ Although some reports suggest that music decreases pain,¹⁷⁻¹⁹ others have detected no effect.^{6,15,20} We observed a significant decrease in pain perception with the addition of music during rigid cystoscopy. Our results also were consistent with previous reports that music increases patient satisfaction.^{5,21-24} Additionally, we found that music significantly increased patient willingness to undergo a repeated procedure. This is particularly promising for the treatment of bladder tumors, which necessitate regular cystoscopic follow-ups.

The present study has several limitations. We did not assess the pain felt by patients during each step of the procedure, such as injecting lidocaine lubricant, rigid cystoscope insertion, and examination of the urinary bladder. Moreover, the sample size was relatively small, and the study was not blinded for the patients and physician, possibly resulting in some bias in data interpretation or reporting of anxiety and pain levels in patients. Our measurements of music's efficacy were solely based on the patients' subjective feelings of pain, satisfaction, and willingness to undergo a repeated procedure. We used a Visual Analog Scale (VAS) to determine the levels of our measured parameters, because this tool is widely used for such research. Finally, all patients in Group II listened to the same classical music during the procedure. However, if classical music was not their preferred musical genre, then this might have affected the results for some patients. Despite these limitations, our study demonstrated that listening to music during rigid cystoscopy ameliorates feelings of anxiety and pain and enhances satisfaction and compliance during this invasive procedure. Additional studies are warranted to validate the beneficial effects of music during flexible cystoscopy, as it replaces rigid cystoscopy as a more easily tolerated procedure.

Conclusions

Adding music during rigid cystoscopy is a simple, economical, and effective means of enhancing patient comfort and decreasing feelings of pain, anxiety, and dissatisfaction. We recommend the incorporation of music as an adjunctive therapy during rigid cystoscopy.

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Abbreviations Used

STAI = State-Trait Anxiety Inventory

VAS = Visual Analog Scale