นิพนธ์ต้นฉบับ

ผลของดนตรีบำบัดต่อความวิตกกังวล, ความเจ็บปวดและความพึงพอใจระหว่างการสลายนิ่ว

สุทธิพันธ์ วงศ์วนากุล, บรรณกิจ โลจนาภิวัฒน์*, พฤทธ์ กิติรัตน์ตระการ*, จักรกฤษณ์ จันทร์อู่*, จักรกริช กล้าผจญ***

* หน่วยศัลยศาสตร์ยูโรวิทยา คณะแพทยศาสตร์ มหาวิทยาลัยเชียงใหม่
**ภาควิชาเวชศาสตร์ฟื้นฟู คณะแพทยศาสตร์ มหาวิทยาลัยเชียงใหม่

บทคัดย่อ

วัตถุประสงค์: การรักษานิ่วบริเวณไตและนิ่วในท่อไตด้วยวิธีการสลายนิ่วทำให้ผู้ป่วยเกิดความวิตกกังวลและความเจ็บปวด วัตถุประสงค์การศึกษานี้ เพื่อศึกษาผลการฟังดนตรีคลาสสิกขณะสลายนิ่วต่อความวิตกกังวล ความเจ็บปวดและความพึงพอใจของผู้ป่วย

ผู้ป่วยและวิธีการศึกษา: การวิจัยเชิงทดลองแบบสุ่มและมีกลุ่มควบคุมโดยเป็นผู้ป่วยจำนวน 57 คนที่มารักษานิ่วโดยวิธีการสลายนิ่วในโรงพยาบาลมหาราช เชียงใหม่ ตั้งแต่เดือนมิถุนายน 2556 ถึงเดือนมกราคม 2558 แบ่งเป็นกลุ่มฟังดนตรีคลาสสิก 15 นาทีก่อนการสลายนิ่วจำนวน 28 คน และกลุ่มที่ไม่ได้ฟังดนตรีคลาสสิกจำนวน 29 คน โดยเปรียบเทียบความวิตกกังวลก่อนและหลังสลายนิ่ว ความเจ็บปวดและความพึงพอใจหลังสลายนิ่วของทั้งสองกลุ่ม

ผลการรักษา: ไม่มีความแตกต่างอย่างมีนัยสำคัญทางสถิติใน เพศ ดัชนีมวลกาย อัตราการหายใจ อัตราการเต้นหัวใจ ความดันโลหิต ความวิตกกังวลก่อนสลายนิ่ว ลักษณะของนิ่ว ลักษณะการสลายนิ่ว รวมทั้งความเจ็บปวด (p=0.835) และความพึงพอใจ (p = 0.055) หลังการสลายนิ่วระหว่างสองกลลุ่ม แต่ผู้ป่วยกลุ่มที่ฟังดนตรีคลาสสิกมีความวิตกกังวลหลังสลายนิ่วน้อยกว่ากลุ่มที่ไม่ได้ฟังดนตรีคลาสสิกอย่างมีนัยสำคัญทางสถิติ (p = 0.010)

สรุป: การฟังดนตรีคลาสสิกเป็นเครื่องมือราคาถูกที่สามารถลดความวิตกกังวลของผู้ป่วยระหว่างการสลายนิ่วได้

คำสำคัญ: การสลายนิ่ว, การฟังดนตรีคลาสสิก, ความวิตกกังวล, ความเจ็บปวด, ความพึงพอใจ

Original article

Effect of Music Therapy on Anxiety, Pain and Satisfaction during Extracorporeal Shock Wave Lithotripsy

Sutthipan Wongwanakul, Bannakit Lojanapiwat*, Phut Kitirattrakarn*, Jakkrit J an-au*, Jakkrit Klaphajone***

*Division of Urology, Faculty of Medicine, Chiangmai University, Chiangmai, Thailand

** Department of rehabilitation, Faculty of Medicine, Chiangmai University, Chiangmai, Thailand

Abstract

Objective: One of the methods for treating renal calculi and ureteric calculi is extracorporeal shock wave lithotripsy (ESWL). This procedure causes anxiety and pain for patients, which affect clinical outcome. This study aims to find the outcomes of having patients listen to music during the procedure, in relation to the patients' anxiety, the level of the pain and the patients' satisfaction.

Material and Methods: This randomized controlled prospective study compared the levels of anxiety, pain, and satisfaction of patients listening to music and those of the patients not listening to music during the ESWL. The experiment was conducted on 57 patients at Maharaj Hospital from June 2013 - January 2015. The patients were divided into 2 groups. The control group consisted of 29 patients and thetreatment group of 28. The sample wore headphones and listened to classical music for 15 minutes before receiving ESWL; the control group wore headphones without music.

Results: There were no statistically significant differences between the two groups in relation to their demographic characteristics, gender, body mass index (BMI), respiratory rate (RR), heart rate (HR), blood pressure (BP), and preoperative anxiety (pre-anxiety). The ESWL data werenot statistically significant: stone site, size, number and ESWL time, power, shot, result, and adverse event. There was no statistically significant difference in pain relief ($p = 0.835$) and patients' satisfaction ($p = 0.055$). However, the study shows that in postoperative anxiety (post-anxiety) there was a more statistically significant reduction in the treatment group ($p = 0.010$) than the control group.

Conclusion: Listening to classical music can be a cost-effective tool for reducing anxiety in patients who receive ESWL.

Keywords: extracorporeal shock wave lithotripsy, classical music listening, anxiety, pain, satisfaction

Introduction

Medical examinations consist of various types of procedures during the processes of diagnosis and treatment, some of which cause patients anxiety and pain. This problem occurs in urological diagnosis and treatmentas well, especially in procedures without anesthetic. Examples of the procedures that may cause this problem are cystoscope, percutaneous nephrostomy tube, transrectal ultrasound prostate biopsy prostate, and ESWL. Anxiety and pain directly affect clinical outcomes. For instance, they cause increased respiratory rate, heart rate, blood pressure, muscle tension, noxious perception, and treatment compliance. An increase in the level of pain, which creates cortisol hormone secretion, is a cause of reduction in immune system.

The effects of music on medical outcomes in such fields as disabled children and child development can be positive. Music can reduce pain and anxiety in patients with cancer, neuropathic pain,terminal illnesses, as well as in patients undergoing abdominal and thoracic surgeries, esophagogastroduodenoscpoe (EGD), and cystoscope. Classical music is accepted as a useful tool used to support the treatment of such diseases. Thus, classical music stimulates the Cingulo-Frontal cortex, resulting in the reduction of anxiety and pain. Additionally, music causes no side effects. It is easily accessible and does not cost much when compared with pain killers.

In the study of Yilmaz, et al. (2003)[3], the team divided the patients who received ESWL into 2 groups: the group with music during the procedure and the other without music. It was found that the patients who listened to music had lower levels of anxiety, blood pressure, and took lower doses of sleeping pills than those in the other group.

Therefore, the researchers have seen the importance and potential for the use of music in alleviating patients' anxiety and pain, and increasing patients' satisfaction. The urologic procedure that is commonly used in experiments is lithotripsy, since it is performed without anesthetic.

Material and Methods

This randomized controlled prospective study compared the levels of anxiety, pain, and satisfaction of patients who listened to music and patients who did not listen to music. The total number of patients was 57, consisting of 28 patients who listened to music and 29 patients who did not listen to music. The criteria for the participating patients: 18 years of age or above and admitted to the Division of Urology, Maharaj Hospital between June 2013 and January 2015. The patients who were not selected consisted of those who had received previous ESWL, used pain killers by themselves 24 hours prior to the procedure, received other kinds of procedures simultaneously, or had hearing impairment.

The researchers collected the following data:gender, body mass index (BMI), respiratory rate (RR), heart rate (HR), systolic blood pressure (SBP), diastolicblood pressure (DBP), characteristics of stones (size, position, number), the duration of procedures, clinical outcomes and complications, anxiety (primary outcome) before and after the procedure. Data from pain and patients' satisfaction (secondary outcome) were collected after the procedure. Data were collected from electronic medical records from Maharaj Hospital, Chiangmai (DigiCards 2007), Suandok Medical Information (SMI), and CMU-PACS.

Data Collection Method

The researchers collected the participants' data, including gender, BMI, RR, HR, SBP, DBP and the characteristics of the stones (size, position, number). Then the patients were divided into 2 groups using the Block Randomization method. The 1st Group was the control group. The patients in this group used headphones (Fullsize Headphone, Circumaural, Semi-Open Type) without classical music. They began wearing headphones 15 minutes before the procedure started and continued using headphones until the end of the procedure. The 2nd group received the treatment. The patients in this group used headphones (Fullsize Headphone, Circumaural, Semi-Open Type) with classical music. They began wearing headphones 15 minutes before the procedure started and continued using headphones until the end of the procedure.

Before the procedure: the State Trait Anxiety Inventory (STAI) score is recorded while the patients wait for the procedure to start. During the procedure: physicians briefly explain the procedure and what they have found to the patients periodically. The headphones are still on the patients. After the procedure: the patients take off headphones. Physicians record the duration of the procedure, vital signs, complications, the State Trait Anxiety Inventory (STAI), Visual Analogue Scale (VAS) pain, and VAS satisfaction.

State Trait Anxiety Inventory (STAI)

STAI was developed in 1970 by Spielberger and colleagues. The validity of the Thai version of the STAI was established in 1983 by Khachapakdi N, et al. Cronbach's alpha internal consistency level was found to be 0.83-0.92. The state anxiety scale measures how a person feels in a certain situation at a certain time. The STAI consists of 20 statements. Subjects are asked to indicate how they felt 'at the moment' using a 4 point scale ranging from 'not at all' to 'very much so'. Total scores obtained from the STAI range from 20 to 80. The anxiety level is evaluated from the total score obtained from the STAI. A score between 1 and 20 is deemed to be not anxious, 21 to 40 to have mild anxiety, 41 to 60 moderate anxiety, and 61 or higher severe anxiety (Öner and Le Compte 1985).

Visual Analogue Scale (VAS)

A Visual Analogue Scale is an instrument that tries to measure a characteristic or attitude that is believed to range across a continuum of values and cannot easily be directly measured. For example, the amount of pain and satisfaction that a patient feels ranges across a continuum from none to an extreme amount of pain/satisfaction. (VAS; 0: no pain, 10: worst pain imaginable)

Data analysis

SPSS version 10.0 was used to analyze the data. Demographic characteristics and ESWL data of individuals in each group were compared using chi square, and independent samples t test was used to compare the experimental and control groups. Paired t test was conducted to test for any significant difference between pre and post test anxiety score, pain and satisfaction scores for each group. The statistical significance level was $P < 0.05$ for this study.

Results

There were no statistically significant differences between the two groups in relation to their demographic characteristics. The comparison of the preoperative average anxiety score of the

groups is shown in Table 1. The difference between the preoperative average anxiety score of the experimental group and the average anxiety score of the control group before the music therapy was not demonstrated to be statistically significant (p = 0.572). The levels of the patients' anxiety in both groups were under the level of mild anxiety.

Table 2 shows the data of ESWL. The results show no statistically significant difference between the two groups. Lithotripsy can be performed with renal calculiand ureteric calculi, with similar amounts in both groups. The size of most of the stones was 1 cm. Patients usually had 1 stone. It took approximately 41 minutes, level 4 power, 3000 shots. Most of the stones were broken into small fragments. Only 1 patient in the treatment group showed the symptom of nausea, which is a side effect that can occur during ESWL

As shown in post-ESWL evaluation records in Table 3, we can see that postoperative RR, HP, SBP, and DBP of the two groups were not statistically significantly different. The levels of pain (p = 0.835) and satisfaction (p=0.055) of the patients in post-ESWL also show no statistically significant difference. However, there was more statistically significant reduction in anxiety (p = 0.010) in the sample group before the ESWL than in the control group.

Discussion

The researchers allowed the patients, including patients with renal calculi and ureteric calculi, to listen to classical music for 15 minutes before ESWL. The findings suggest that music may be a simple, cost-effective tool to help patients manage anxiety. Levels of anxiety could be reduced more when patients listened to music. The reduction in anxiety in the patients in the 2 groups in post-ESWL might be considered a result of feeling relaxed after the procedure was finished without complications.

Table 1. Demographic characteristics of the sample

	Control = 29	Treatment = 28	P value
Gender n (%)			0.337
Male	15 (51)	18 (64.28)	
Female	14 (49)	10 (35.72)	
BMI mean (SD)	24.70 (4.06)	24.55 (4.26)	0.893
pre-RR mean (SD)	19.10 (1.26)	19.71 (0.71)	0.378
pre-HR mean (SD)	76.13 (11.76)	79.39 (11.83)	0.303
pre-SBP mean (SD)	128.27 (17.85)	136.60 (16.00)	0.069
pre-DBP mean (SD)	77.65 (12.49)	82.60 (11.78)	0.329
pre-Anxiety mean (SD)	41.79 (10.53)	39.92 (9.66)	0.572

Table 2. ESWL treatment data

	Control = 29	Treatment = 28	P value
Stone n (%)			0.146
RC	18.00 (62.07)	12.00 (42.86)	
UC	11.00 (37.93)	16.00 57.14)	
Stone size mean (SD)	1.24 (0.61)	1.02 (0.42)	0.161
Stone number mean (SD)	1.24 (0.57)	1.10 (0.31)	0.282
ESWL time mean (SD)	41.79 (7.81)	41.78 (9.64)	0.997
ESWL power mean (SD)	3.96 (0.86)	4.40 (1.01)	0.085
ESWL shot mean (SD)	3,037 (555)	2,988 (758)	0.780
Result n (%)			0.262
complete fragment	8.00 (27.59)	5.00 (17.86)	
small fragment	21.00 (72.41)	21.00 (75.00)	
no fragment	0.00 (0)	2.00 (7.14)	
Adverse event n(%)			1.000
no	29.00 (100)	27.00 (96.43)	
yes	0.00 (0)	1.00 (3.57)	

Table 3. post-ESWL evaluation

	Control = 29	Treatment = 28	P value
post-RR mean (SD)	19.65 (0.76)	19.78 (0.62)	0.487
post-HR mean (SD)	71.79 (11.17)	72.53 (12.67)	0.815
post-SBP mean (SD)	142.72 14.14)	143.25 (20.26)	0.909
post-DBP mean (SD)	81.13 (9.90)	86.40 (11.27)	0.068
post-Anxiety mean (SD)	38.03 (9.32)	32.57 (5.82)	0.010
Vas Pain mean (SD)	5.27 (2.31)	5.03 (5.74)	0.835
Vas Satisfaction mean (SD)	7.89 (2.56)	9.03 (1.13)	0.055

There is numerous research that show similar findings regarding music and anxiety. For instance, Yung et al's (2002) study investigating the effect of music on preoperative anxiety in patients undergoing prostate surgery had similar findings. Yılmaz et al (2003) conducted a study to evaluate the effect of music on sedation in extracorporeal shock wave lithotripsy treatment, comparing its anxiolytic effects with those of midazolam. The STAI was found to be statistically significantly lower in the music group than in the midazolam group, which indicates that with the anxiolytic effects of music, ESWL can be performed effectively using music for sedation rather than midazolam. Cooke et al (2005) conducted a randomized controlled trial to examine the effect of music on preoperative anxiety in adult patients undergoing day surgeries such as orthopaedic surgery, cystoscopy, and biopsy. The preoperative STAI score mean difference between the intervention and control patients was statistically significant.

As indifferent of RR, HP, BP, they are considered to be the result of too small a sample size." We might also explain that the indifferences in pain and satisfaction between the two groups, when compared to the findings of a similar study in foreign countries, could be a result of the unsuitability of the application of VAS forThai patients. That is to say, Thai people are normally considerate toward others' feelings and highly respectful of medical practitioners. Thus, using VAS as a single questionnaire might not be effective in reflecting the true pain and satisfaction levels of the patients. We might say that using various questionnaires could produce results as accurate as STAI.

Conclusion

The results of this study show that listening to classical music can be a cost-effective tool for reducing anxiety in patients who receive ESWL. Despite the positive results, however, the current study needs to be replicated using a larger sample size. Furthermore, it is recommended that new pain and satisfaction evaluation forms that are suitable for Thai people be created.

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แบบวัดความวิตกกังวล

รหัส .....

คำชี้แจง

ข้อความต่อไปนี้ เป็นข้อความซึ่งท่านจะใช้บรรยายความรู้สึกของตัวท่านเอง ข้อความเหล่านี้ไม่มีคำตอบที่ถูกหรือผิด แต่จงพิจารณาเลือกข้อความที่ท่านคิดว่าตรงกับความรู้สึกทั่วๆ ไปของท่านมากที่สุด

	ไม่มีเลย	มีบ้าง	ค่อนข้างมาก	มากที่สุด
1. ท่านรู้สึกสงบ	1	2	3	4
2. ท่านรู้สึกมั่นคงในชีวิต	1	2	3	4
3. ท่านรู้สึกตึงเครียด	1	2	3	4
4. ท่านรู้สึกเสียใจ	1	2	3	4
5. ท่านรู้สึกสบายใจ	1	2	3	4
6. ท่านรู้สึกหงุดหงิด	1	2	3	4
7. ท่านรู้สึกกังวลกับเคราะห์ร้ายต่างๆ ที่อาจจะเกิดขึ้น	1	2	3	4
8. ท่านรู้สึกว่าได้พักผ่อน	1	2	3	4
9. ท่านรู้สึกวิตกกังวล	1	2	3	4
10. ท่านรู้สึกสะดวกสบาย	1	2	3	4
11. ท่านรู้สึกเชื่อมั่นในตนเอง	1	2	3	4
12. ท่านรู้สึกตื่นเต้นง่าย	1	2	3	4
13. ท่านรู้สึกกระสับกระส่าย	1	2	3	4
14. ท่านรู้สึกอึดอัดใจ	1	2	3	4
15. ท่านรู้สึกผ่อนคลาย	1	2	3	4
16. ท่านรู้สึกพึงพอใจ	1	2	3	4
17. ท่านรู้สึกกังวลใจ	1	2	3	4
18. ท่านรู้สึกตื่นตระหนก	1	2	3	4
19. ท่านรู้สึกร่าเริงเบิกบานใจ	1	2	3	4
20. ท่านรู้สึกแจ่มใส	1	2	3	4

รวมคะแนน .....

แบบประเมินความเจ็บปวด / Visual Analog Scale for Pain (VAS Pain)

แบบประเมินความพึงพอใจ / Visual Analog Scale for satisfaction (VAS satisfaction)