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ORIGINAL ARTICLE

Shockwave lithotripsy with music: Less painful and more satisfactory treatment☆

D.G. Ordaz Jurado*, A. Budia Alba, P. Bahilo Mateu, M. Trassierra Villa, D. López-Acón, F. Boronat Tormo

Unidad de Litotricia y Endourología, Servicio de Urología, Hospital Universitario y Politécnico La Fe, Valencia, Spain

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KEYWORDS
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Abstract
Introduction: The objective of this study was to determine whether listening to music during a session of extracorporeal shockwave lithotripsy (ESWL) improves patients' pain.
Material and method: A simple, blind randomization was undertaken of patients with kidney and ureter stones attending an ESWL session of 7000 waves for the first time, between September and December 2014. One group was given music and the other was not. The age, gender, location of stones (kidney/ureter) were recorded and 2 questionnaires: pre ESWL (questionnaire A) and postESWL (questionnaire B). Each questionnaire contained a question about anxiety and another question on pain on the Likert scale (0–10). Questionnaire B also had a question on satisfaction and comfort (Likert 0–10). Other variables included heart rate, respiratory rate, systolic and diastolic blood pressure on wave 2000, 5000 and 7000, reason for halting the procedure, total pethidine (mg), secondary analgesia, energy (J) and frequency (Hz). Bivariate analysis using the Student's *t*-test, X^2/Fisher test and a multiple linear regression model.
Results: The sample comprised 95 patients, with a mean age of 52 (±13) years, 35 (36.84%) females, 60 (63.2%) males. A total of 25 (26.3%) ureter stones and 70 (73.7%) kidney stones. A number of 42 (44.2%) patients were given music. There were no differences between the demographic variables or questionnaire A scores. Satisfaction and pain were better on questionnaire B with music.
Conclusion: Music can reduce pain and improve patient satisfaction in ESWL treatment. More studies are required to confirm this effect.

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* Corresponding author.
E-mail address: gusorju@hotmail.com (D.G. Ordaz Jurado).

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Litotricia por ondas de choque con música: un tratamiento menos doloroso y más satisfactorio

Resumen

Introducción: El objetivo del estudio fue determinar si escuchar música durante una sesión de litotricia extracorpórea por ondas de choque (LEOC) mejora el dolor de los pacientes.

Material y método: Se realizó una aleatorización simple y oculta de pacientes con litiasis renales o ureterales que acudieron por vez primera a una sesión de LEOC de 7.000 ondas, entre septiembre y diciembre de 2014. Un grupo recibió música mientras que el otro no. Se registraron la edad, sexo, localización de la litiasis (renal/ureteral) y 2 cuestionarios pre-LEOC (cuestionario A) y post-LEOC (cuestionario B). Cada cuestionario contiene una pregunta sobre ansiedad y otra sobre dolor en escala Likert (0 al 10). El B, además, contiene otra sobre satisfacción y otra sobre comodidad (Likert 0 al 10). Otras variables fueron la frecuencia cardiaca, respiratoria, tensión arterial sistólica y diastólica en la onda 2.000, 5.000 y 7.000, causa de interrupción del procedimiento, petidina total (mg), analgesia secundaria, energía (J) y frecuencia (Hz). Se realizó un análisis bivariante con t de Student, X^2/Fisher y un modelo de regresión lineal múltiple.

Resultados: La muestra incluyó a 95 pacientes, con una media de edad de 52 años (±13), 35 mujeres (36,84%), 60 hombres (63,2%); 25 para litiasis ureterales (26,3%) y 70 (26,3%) para renales (73,7%). Un total de 42 pacientes (44,2%) pacientes recibieron música. No hubo diferencias entre las variables demográficas ni en las puntuaciones del cuestionario A. La satisfacción y el dolor fueron mejores en el cuestionario B con música.

Conclusión: La música es capaz de disminuir el dolor y mejorar la satisfacción del paciente en los tratamientos con LEOC. Más estudios son necesarios para comprobar este efecto.

Introduction

Pain is a complex, unpleasant sensation with a somatic emotional component, usually associated with tissue damage.[1] Distraction due to pain modulation has proved to be successful, but with considerable differences from one patient to another. Studies evaluating this feature using brain magnetic resonance imaging, magnetoencephalography and others have found increased brain activity in the anterior cingulate cortex during distraction and decreases in other limbic areas,[2,3] which helps to tolerate pain.

Recent publications have shown that music might modulate pain and anxiety and provide beneficial effects in numerous clinical procedures,[4–11] including urologic ones such as flexible cystoscopy[5,12] and prostate biopsy.[13]

The exact brain mechanism is still unknown, although it appears that distraction during noxious stimulation increases activity in the periaqueductal gray region, associated with inhibition of sensory processing of noxious signals.[14] Recent data also point out that areas responsible for pain awareness are also involved in cognitive processing,[15,16] such as the amygdala.

Extracorporeal shockwave lithotripsy (ESWL) is one of the standard methods for treating ureteral and renal lithiasis.[16,17] These patients usually present pain during this treatment, especially when the lithiasis is located in the kidney.

The main objective of this study was to evaluate the effect of music during an ESWL session to control pain, anxiety and to improve satisfaction among our patients.

Material and methods

Population

A clinical trial was performed with simple randomization and with its sequence hidden from the main investigator. We included patients of both sexes, between 18 and 80 years old, with renal or ureteral calculi, who attended the first session of ESWL from September 2014 to December 2014, within our lithotripsy protocol with 7000 waves.

The composition of the stone was unknown. We excluded patients who had had previous ESWL at any time in their lives, with hypoacusis, those who had taken analgesia at home before treatment or took analgesics as usual medication.

The ESWL indication was made from the urology consultation following the EAU 2016 urolithiasis guidelines.[18] Oral and written consent was obtained of ESWL and, to enter the trial, the Helsinki ethics declaration form was followed. Blood test, electrocardiogram, and urine culture were also requested, which were reviewed and treated, if necessary, 7 days before treatment.

Patients were divided into 2 groups according to a simple randomized assignment (random number table): group A (patients listening to music during the session), or group B (standard treatment) (Fig. 1). This sequence was kept secret for the main investigator. In the music group, the patient chose the playlist before the session from 5 different types (classical, chill out, international pop, Spanish pop, and jazz), each playlist lasted 70 min, covering the 60 min that each session lasts.