

## 探討術前音樂對體外震波碎石術病患的影響

### The Influence of Preoperative Music on Patients Undergoing Extracorporeal Shock Wave Lithotripsy (ESWL)

#### 中文摘要

本研究旨在探討術前音樂對體外震波碎石術病患術前焦慮之影響，並建立一套以心率變異性 (heart rate variability) 為主軸的測量模式，以評估音樂治療在緩解焦慮上的成效。

研究樣本為北醫附醫泌尿科 68 位接受體外震波碎石術的病人，實驗組 (音樂組) 與對照組各 34 人，音樂組於術前聆聽大自然音樂，並於播放音樂前後進行生理測量，對照組則依平時的方式等待治療。研究工具為結構式自填問卷，包括知識量表及情境焦慮量表來評估病人的心理狀態，利用生理反應測量值來作生理信號分析以評估音樂治療的效果。生理反應測量值則包括血壓、心跳速率及心電圖，並由心電圖作心率變異性的時域分析 (time domain analysis) 及頻域分析 (frequency domain analysis)。

研究結果發現病患於接受震波碎石治療前，有輕度接近中度的焦慮，而音樂的介入造成了實驗組與對照組不同的生理表現。前後測音樂組與對照組的病患收縮壓均下降達顯著，頻域分析的心率變異性參數部分，音樂組的自然對數低頻值 (Ln LF)、低頻/高頻比值 (LF/HF) 下降達顯著 ( $p < .05$ )，標準化高頻 (HF nu) 增加也達顯著 ( $p < .005$ )，而對照組的改變都未達顯著。無碎石經驗病患組所得到的結果與整體結果相近，而曾有碎石經驗的病人，雖然焦慮分數與初診病患沒有差異，但音樂組仍有放鬆的趨勢，只是對於音樂的反應不如無碎石經驗病患來的明顯。

以生理參數來評估音樂治療對緩解術前焦慮的成效，研究發現，血壓及心跳速率無法區分出音樂組與對照組的差異，而心率變異性的各項參數中，也以 Ln LF、LF/HF 及 HF nu 最能反應出音樂組與對照組的差距。由 Ln LF、LF/HF 的下降，HF nu 的上升，顯示音樂組的病患在聆聽音樂時，副交感神經的控制增強，代表術前音樂的確能使病患達到減緩焦慮的功效。且以心率變異性為主的測量方式，會較傳統使用血壓、呼吸速率、心跳速率或是血中激素濃度等測量方式，更有易操作性、高敏感性及非侵入性等特點，是一種有信度的測量工具。

#### 英文摘要

This study intended to discuss the influence of preoperative music on patients undergoing Extracorporeal Shock Wave Lithotripsy (ESWL) and to establish the measurement model of heart rate variability (HRV) which is applied to evaluate the effects of music therapy.

Method: There were 68 patients recruited in this study. The patients were assigned

randomly to music (n=34) and control (n=34) groups. The music group listened to the natural music before ESWL while the control group received ordinary medical care before treatment. Data regarding patients' background and understanding of ESWL were collected. The psychological measurement is the short form of state- Spielberger State Trait Anxiety Inventory (s-STAI), and the physiological measurement include blood pressure, heart rate and the power spectrum analysis of HRV.

Result: The anxiety level of patients is about mild to moderate, and the intervention of preoperative music made them relaxed. After the intervention of music, the systolic blood pressure of both music and control group decreased. However, the Ln LF, LF/HF decreased and the HF nu increased significantly in the music group and but these parameters did not change significantly in the control group. Patients who had previous experience of ESWL showed less change of HRV than non-experienced patients.

Conclusion: There was no significant change of blood pressure and heart rate in evaluating the effects of music therapy by physiological parameters. The decrease of Ln LF, LF/HF and the increase of HF nu in the music group revealed increasing vagal tone control while listening to music and suggested that music therapy could decreased the preoperative anxiety of patients undergoing ESWL. In this study, we also conclude that the measurement model of HRV would be a more promising tool for detection of relaxation responses rather than traditional measurement like blood pressure, respiratory rate, heart rate or hormone.