

Use of Mirror Therapy to Treat Psychogenic Tremors

Tomris Duymaz 

Department of Physiotherapy and Rehabilitation, İstanbul Bilgi University Faculty of Health Sciences, İstanbul, Turkey

ABSTRACT

Psychogenic tremors present with various clinical demonstrations in neurological practice. In mirror therapy, the patient concentrates on the image of the normal limb and learns to manage pain and movement. This study aimed to use mirror therapy for the treatment of psychogenic tremors. A 19-year-old female presented in the hospital with complaints of incompetence in manual skills, sluggish movements, reduction in muscle strength, weakness of fine motor activities, and presence of involuntary movements, such as tremors in the right upper extremity, which appeared approximately 2 years ago but worsened in the last 1 year. Both before and after treatment, we used a digital goniometer to assess the range of motion of the forearm and wrist, digital hand-held dynamometer to evaluate flexor and extensor muscles of the hand and wrist, hand grip dynamometer and pinchmeter to evaluate muscle strength, Disabilities of the Arm, Shoulder and Hand (DASH) questionnaire to assess the functional capacity of the upper extremity, Jebsen hand function test to evaluate the functionality of the hand, Grooved Pegboard test to evaluate manipulative skills, and functional independence measure (WeeFIM) to evaluate the quality of life. There was an improvement in all the parameters when compared before and after treatment. The results of this study showed that mirror therapy was a very useful approach in the treatment of psychogenic tremors, which significantly disrupt exercise compliance and are characterized by severe psychogenic tremors that reduce the quality of life.

Keywords: Mirror therapy, psychogenic, tremor

INTRODUCTION

Psychogenic tremors present with various clinical demonstrations in neurological practice. It is sometimes difficult to differentiate psychogenic tremors from organic neurogenic movement disorders. Psychogenic tremors are phenomenologically encountered either as hyperkinetic movement disorders, such as tremor, dystonia, myoclonus, and tics or as hypokinetic movement disorders, such as parkinsonism, which is less frequent (1, 2).

In mirror therapy, the patient concentrates on the image of the normal limb and learns to manage pain and movement. In this study, we aimed to use mirror therapy for the treatment of psychogenic tremors.

CASE PRESENTATION

A 19-year-old female (body mass index, 18.75 kg/m²) presented in the hospital with complaints of incompetence in manual skills, sluggish movements, reduction in muscle strength, weakness of fine motor activities, and presence of involuntary movements, such as tremors in the right upper extremity, which appeared nearly 2 years ago but worsened in the past 1 year. According to the patient's personal medical history, she had been diagnosed with psychogenic tremors, which were not accompanied by any

neurological symptom. No genetic disorder was detected in the family history. The patient was informed of the projected examination techniques and treatment method and was asked to sign the informed consent form before the initiation of the therapy. After implementation of necessary examination techniques, the patient underwent a rehabilitation program with mirror therapy. No medical treatment was administered, except exercise, mirror therapy, and occupational therapy. The patient's sociodemographic data were recorded. Both before and after the treatment, we used a digital goniometer to assess the range of motion of the forearm supination/pronation and wrist flexion/extension/ulnar deviation/radial deviation, digital hand-held dynamometer to evaluate flexor and extensor muscles of the hand and wrist, hand grip dynamometer and pinchmeter to evaluate muscle strength, DASH questionnaire to assess the functional capacity of the upper extremity, Jebsen hand function test to evaluate the functionality of the hand, Grooved Pegboard test to evaluate manipulative skills, and functional independence measure (WeeFIM) to evaluate the quality of life (3-6).

The patient received a total of 15 sessions of mirror therapy (5 sessions per week for 3 weeks). Moreover, she was requested to exercise in front of the mirror at home. Each session lasted for 45

ORCID IDs of the author: T.D. 0000-0003-0917-2098.

Corresponding Author: Tomris Duymaz E-mail: fzt_tomrisduymaz@yahoo.com

Received: 06.12.2017 • Accepted: 28.12.2018

©Copyright by 2018 Gaziantep University School of Medicine – Available online at www.eurjther.com

min. She was also recommended to exercise for at least 45 min/day at home. A 45×30 cm mirror was used in the therapy.

This research was not approved by the ethics committee, but the patient's and head doctor's in-hospital approvals were obtained as ethical considerations.

While implementing the mirror therapy for our patient with psychogenic tremors, the affected upper limb was hidden behind the mirror. The intact hand was used to perform exercises in front of the mirror, such as performing supination and pronation; flexing and extending the wrist and fingers; squeezing a ball; touching different floors; strengthening the wrist through flexion-extension using resistant springs and dumbbells; holding a pen; filling glasses with water; using spoons and forks; zipping, unzipping and fastening buttons; drawing different shapes; and exercising motor and hand skills with the Purdue Pegboard set.

Comparing the pre- and post-treatment evaluation results, there was an improvement in the patient's joint range of motion (wrist flexion increased from 75.1° to 88.4°, wrist extension from 59.2° to 67.8°, ulnar deviation from 31.1° to 35°, radial deviation from 15.7° to 18.2°, and supination from 78.1° to 88.6°), muscle strength (flexion strength increased from 6.6 to 8.8 kg, extension strength from 7.1 to 9.3 kg, handgrip measurement from 8.3 to 11.7 kg, and pinchmeter measurement from 2.6 to 3.6 kg), manipulative dexterity (Grooved Pegboard fitting activity increased from 34.19 to 57.68 s, removal activity from 12.12 to 24.91 s, JHFT writing score from 9.51 to 11.82, card turning activity score from 9.83 to 11.25, picking up small common objects score from 6.67 to 8.67, stimulated feeding from 11.15 to 12.25, stacking checkers from 7.29 to 8.06, moving empty cans from 5.56 to 6.86, and moving filled cans from 6.01 to 8.12 s), functional activities (DASH score increased from 19.75 to 25.5), and daily activities (WeeFIM social cognition subitem score increased from 20 to 21) along with a reduction in involuntary movements and pain experienced during the activities.

DISCUSSION

This study presented the effectiveness of mirror therapy in the treatment of a patient who experienced psychogenic tremors. Increasing the ability to perform daily living activities and functions were the primary goals in the treatment of this subject.

The term psychogenic tremor is conventionally used to define the disorders arising from an emotional or psychiatric problem in the absence of any anatomical or neurochemical disease (7). Although there are no accurate data on the prevalence of psychogenic illnesses in Turkey, a study performed at a clinic on movement disorders in the USA reported that 28 (3.3%) of 842 successive patients who presented at the clinic were diagnosed with psychogenic tremors (8). The age of onset varies from study to study, but it is interesting to note that there is a clear preponderance of female patients (6).

The clinical signs of psychogenic tremors include onset with a sudden and triggering event, rapid start with maximum symptoms and static progress, features that are noncompliant with an

organic disease, disappearance or change of a movement when attention is dissipated, presence of various abnormal movements, increase of the movement when the affected body is considered, intentional slowdown of movements, and reduction of movements when another region of the body is activated. Some of these features can be also seen in neurological diseases (9). Furthermore, a neurological disease that accompanies psychogenic tremors has been reported in 10%-15% of patients. However, the neurological disease was not detected in our patient. Brain magnetic resonance imaging (MRI) findings and dopamine levels were normal.

Mirror therapy is a neurorehabilitation technique that enables the neural network in the brain to reconfigure itself by creating a visual illusion. In other words, it is considered as the substitution of reduced/missing proprioceptive input with the help of a mirror. Mirror therapy involves the superposition of the movements of the unaffected side on the affected side while watching the reflection in the mirror. "Mirror neuron" is a neuron that fires both when a person acts and when the person observes the same action performed by another person. The activation of mirror neurons plays an important role in the enhancement of motor skills. Functional MRI studies have indicated that this method ensures plasticity in the brain (10).

In this study, consistent with the literature, we observed that the use of mirror therapy increased the range of motion and strength of the wrist and fingers, enhanced dexterity, and improved the patient's quality of life (11).

There are only a few studies suggesting the efficiency of mirror therapy on the upper limb in the context of psychogenic tremors. Based on the findings of the present study, we concluded that mirror therapy is an effective method for rehabilitation of the hand and upper limbs in patients with psychogenic tremors (12-14).

In this report, we presented a patient diagnosed with psychogenic tremors whose complaints were completely resolved with mirror therapy.

CONCLUSION

There is no study in the literature on the use of mirror therapy for treating psychogenic tremors. Furthermore, we designed a patient-centered active physical and occupational therapy program with the primary goals of increasing physical functioning, decreasing movement disturbance, independently performing daily living activities, and improving the quality of life while considering the needs and requirements of the caregiver and subject. The exercise program helped in improving upper extremity functions in the subject. Larger trials will be needed to determine the success of this treatment.

This study showed that mirror therapy was a very useful approach in the treatment of psychogenic tremors, which significantly disrupt exercise compliance and characterized by severe psychogenic tremors that reduce the quality of life.

Informed Consent: Written informed consent was obtained from the patient who participated in this study.

Peer-review: Externally peer-reviewed.

Conflict of Interest: The authors have no conflicts of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

REFERENCES

- Özekmekçi S, Ertan S. Psychogenic movement disorders. *Türkiye Klinikleri J Med Sci* 2005; 1: 62-7.
- Thenganatt MA, Jankovic J. Psychogenic movement disorders. *Neurol Clin* 2015; 33: 205-24.
- Andrews A. Hand-held dynamometry for measuring muscle strength. *Journal of Human Muscle Performance* 1995; 1: 35-50.
- Hudak PL, Amadio PC, Bombardier C. Development of an upper extremity outcome measure: the DASH (disabilities of the arm, shoulder, and hand). The Upper Extremity Collaborative Group (UECG). *Am J Ind Med* 1996; 29: 602-8.
- Stern EB. Stability of the Jebsen-Taylor Hand Function Test across three test sessions. *Am J Occup Ther* 1992; 46: 647-9.
- Hinson VK, Cubo E, Comella CL, Goetz CG, Leurgans S. Rating scale for psychogenic movement disorders: scale development and clinical testing. *Mov Disord* 2005; 20: 1592-7.
- Edwards MJ, Bhatia KP. Functional (psychogenic) movement disorders: merging mind and brain. *Lancet Neurol* 2012; 11: 250-60.
- Sar V. Epidemiology of Dissociative Disorders: An Overview. *Epidemiology Research International* 2011; 1-8.
- Dalocchio C, Arbasino C, Klersy C, Marchioni E. The effects of physical activity on psychogenic movement disorders. *Mov Disord* 2010; 25: 421-5.
- Rothgangel AS, Braun SM, Beurskens AJ, Seitz RJ, Wade DT. The clinical aspects of mirror therapy in rehabilitation: a systematic review of the literature. *Int J Rehabil Res* 2011, 34: 1-13.
- Scheub T, Lieberman A. Treatment of Functional (Psychogenic) Tremor with a Mirror Box: A Case Report. *Ann Clin Case Rep* 2016; 1: 1054.
- Nielsen G, Stone J, Edwards MJ. Physiotherapy for functional (psychogenic) motor symptoms: A systematic review. *J Psychosom Res* 2013; 75: 93-102.
- Garry MI, Loftus A, Summers JJ. Mirror, mirror on the wall: viewing a mirror reflection of unilateral hand movements facilitates ipsilateral M1 excitability. *Exp Brain Res* 2005; 163: 118-22.
- Nojima I, Mima T, Koganemaru S, Thabit MN, Fukuyama H, Kawamata T. Human motor plasticity induced by mirror visual feedback. *J Neurosci* 2012; 32: 1293-300.

How to cite:

Duymaz T. Use of Mirror Therapy to Treat Psychogenic Tremors. *Eur J Ther* 2018; 24(2): 118–20.