



Effect of Foot Reflexotherapy in Patients with Familial Mediterranean Fever (FMF) Attack

Senol Dane*

Department of Physiology, Faculty of Basic Medical Sciences, College of Health Sciences, Nile University of Nigeria, Abuja, Nigeria

ABSTRACT

Introduction: FMF symptoms occur in attacks that last from one-three hours to one-three days. They are fever, abdominal pain, chest pain, achy and swollen joints, a red rash on the legs, muscle aches. Evidences indicate that complementary or integrative approach may heal the symptoms of FMF attacks. The purpose of this study was to present the possible beneficial effects of foot reflexotherapy in patients with FMF attack.

Material and Methods: The subjects of the present study were six patients diagnosed with FMF. Pre- and post-tests were completed by the researcher using a Likert scale. The patients were treated with foot reflexotherapy twice each day during attack.

Results: There was statistically significant decrease in all FMF symptom scores after foot reflexotherapy.

Conclusion: Foot reflexotherapy was beneficial and amazingly effective in patients with FMF attack.

Key words: FMF, Foot reflexotherapy, Complementary medicine, Chest pain

HOW TO CITE THIS ARTICLE: Senol Dane, Effect of Foot Reflexotherapy in Patients with Familial Mediterranean Fever (FMF) Attack, J Res Med Dent Sci, 2020, 8 (6): 241-245.

Corresponding author: Senol Dane

e-mail✉: senol.dane@nileuniversity.edu.ng

Received: 07/09/2020

Accepted: 28/09/2020

INTRODUCTION

Familial Mediterranean Fever (FMF) is a genetic autoinflammatory disorder that causes recurrent fevers and painful inflammation of abdomen, lungs, and joints. FMF is an inherited disorder that usually occurs in people of Mediterranean countries. However, it can affect people in any ethnic group, North African, Jewish, Arab, Armenian, Turkish, Greek, or Italian people are more sensitive against to this disease.

FMF is typically diagnosed during childhood. However, it has no curative treatment, the drug colchicine relieves signs and symptoms of FMF or even prevent them altogether by sticking to the treatment plan. However, in some patients, attacks may be inevitable.

Signs and symptoms of FMF usually begin during

childhood. They occur in attacks that last from one-three hours to one-three days. Arthritic attacks may last for weeks or months. Signs and symptoms of familial Mediterranean fever are fever, abdominal pain, chest pain, achy and swollen joints, a red rash on the legs, muscle aches. Between attacks, the patient is completely normal. Symptom-free periods may be as short as a few days or as long as several years.

It has been indicated that foot reflexotherapy had an undeniable role in relieving pain, psychological stress and fatigue in patients with various health problems [1-3] including rheumatoid arthritis [4], cancer [2,3] and some other disturbances [5]. It has been reported that foot reflexotherapy reduced the psychological stress, heart rate, respiratory rate, and arterial blood pressure in another study [6]. Also, reflexology therapy was reported to reduce pain in patients with low back pain [7]. Furthermore, a randomized controlled study by Siev-Ner et al. [8] reported that 11-week feet reflexotherapy and massage of the calf area in patients with multiple sclerosis

led to improvement in intensity of paresthesias, urinary symptoms, and muscle strength. In a recent study, foot reflexotherapy was reported to have an important role in increase some EEG waves (beta and gamma) related to memory and attention functions of the brain [9]. Also, in a recent study, foot reflexotherapy was suggested to improve inattention, hyperactivity findings in a child with ADHD and, they reported that his enuresis nocturna disappeared completely after foot reflexotherapy of 8 weeks [10]. The action mechanisms of complementary methods including foot reflexotherapy are not exactly known now. But, many scientific studies claim that traditional complementary therapies such as foot reflexotherapy, wet cupping therapy and footbath therapy work for homeostasis, and regulate equilibrium state between sympathetic and parasympathetic autonomic nervous systems and in general increase the parasympathetic tone, while decreasing sympathetic tone [11-16]. The aim of this study was to investigate the possible role of the traditional foot reflexotherapy in relieving of the symptoms in patients with acute FMF attack.

MATERIAL AND METHODS

Ethics

The experimental protocol was in accordance with international ethical standards and no inconformity was found in relation to the Helsinki Declaration (1975, revised in 1996-2013) [17].

Participants

Six (6) patients with FMF diagnosed clinically and laboratory were involved in the study. The mean age of the patients was 28.13 years (SD=3.47). The patients with FMF were recruited through advertisements on notice board of a university hospital (Nizamiye Hospital) in Abuja, Nigeria. After a telephone interview, potential participants were invited to the Nile University of Nigeria, College of Health Sciences. The aims and objectives of the study were explicitly explained to the parents of babies before commencement of the study. All patients voluntarily gave a written informed consent to participate in the study.

Data collection

The subjective data were collected using a Likert scale. The Likert scale is a simple method used for the assessment of variations in the subjective

intensity of symptoms of acute attacks in patients with FMF. A score of zero represents no pain and other symptoms, while a score of "3" represents "extreme".

Foot reflexotherapy

Foot reflexotherapy was performed according to the recommendation of Hanne Marquardt, a pioneer of this complementary therapy technique [18]. Briefly, using the thumbs and fingers of the working hand, appropriate pressure was applied to specific areas of both feet of each patient. These areas correspond to the projection zones of the brain on the foot and represent classic foot reflexotherapy zones chosen in all reflexotherapies. Reflexotherapy was applied to both feet one time each day (for duration of 20 minutes per session) during acute FMF attack in all patients. Foot reflexotherapy was applied to all patients by one of the authors (SD) who is a senior medical doctor and has many studies on reflexotherapy and other complementary medicine techniques. Further details on the technique have been described [18].

Statistical analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 16.0 for Windows. All data had the normal distribution. The paired sample t-test was used for analysis. A p value of ≤ 0.05 was considered statistically significant.

RESULTS

All patients included in this study had only acute FMF attacks. They continued their routine drug treatments with colchicine. There was statistically significant decrease in all FMF attack symptom scores after foot reflexotherapy except red rash on the legs (Table 1). Fever ($t=5.966$, $p=0.002$), chest pain ($t=7.906$, $p=0.001$), achy-swollen joints ($t=3.873$, $p=0.012$), muscle aches ($t=4.392$, $p=0.007$) were significantly decreased after foot reflexotherapy (Table 1).

DISCUSSION

The results of this study have shown that foot reflexotherapy is beneficial and amazingly effective in the complementary relieving of acute FMF attack symptoms. This complementary therapy significantly decreased almost all scores of the acute FMF attack symptom scores. Thus,

Table 1: FMF attack symptom scores before / after foot reflexotherapy using a Likert scale for assessment.

	Fever	Abdominal pain	Chest pain	Achy-swollen joints	Red rash on the legs	Muscle aches
Case 1	3/1	2/1	3/1	1/1	2/2	3/2
Case 2	2/0	3/0	2/0	2/1	1/1	3/1
Case 3	3/0	3/1	3/1	3/2	1/0	3/0
Case 4	2/1	1/0	2/0	2/1	1/1	2/1
Case 5	3/1	3/2	2/1	2/2	1/1	2/1
Case 6	2/1	2/1	2/1	2/0	2/1	3/2
T	5.966	3.953	7.906	3.873	1.581	4.392
P	0.002	0.011	0.001	0.012	0.175	0.007

foot reflexotherapy can be used for alleviating acute FMF attack symptoms.

Several reports have showed the therapeutic effectiveness of reflexotherapy [19–22]. This traditional and complementary therapy uses application of deep massage by a trained therapist to specific areas, representing various organs on the ears, hands, and feet [23]. These areas in reflexotherapy are considered as projections of the different organs or tissues of the body. The most widely used region of the body in reflexotherapy is the foot [9]. It has been asserted that reflex arcs related to the different organs and tissues begin from specific small areas on the foot in foot reflexotherapy. Studies have shown that foot reflexotherapy play an important role in reducing the severity of various health problems including gastrointestinal and sleep disorders [1-3,24,25].

Though the mechanisms involved in the effects of foot reflexotherapy on FCIS and associated problems are not fully understood, some authors have suggested a possible role of the neuroimmune system in mediating the positive effects of foot reflexotherapy on the body. Foot reflexotherapy is believed to mediate a balance between sympathetic and parasympathetic divisions of the autonomic nervous system, and also, stimulate the release of neuromediators that act on local and distant sites to regulate physiological processes that maintain a balanced functioning of the body [10,11,26]. Indeed, reflexotherapy has been used to ameliorate the symptoms of numerous disorders in humans, including chronic pain [1], psychological stress [27], attention-deficit/hyperactivity disorder [10]. Thus, foot reflexotherapy is a practically harmless treatment technique that can be used to address the maladies of patients in different health conditions.

Many studies have reported that the most

complementary medicine applications result in the decrease of psychological stress through decreasing sympathetic activity and increasing parasympathetic activity in the body and support the results of the present study. For example, it has been reported that wet cupping therapy restored sympatho-vagal imbalances and decreased psychological stress by decreasing sympathetic activity and increasing parasympathetic activity [12]. In some recent studies, it was reported that foot reflexotherapy [9], footbath therapy [13], and wet cupping therapy increases [28] beta and gamma activities of the brain EEG in young healthy humans. Also, some different complementary approaches were reported to be very useful to decrease pain in some other pain syndromes, for example, foot bathing therapy for surgical pain in women with cesarean section [16], moving dry cupping for upper shoulder and neck pain [29], wet cupping for shoulder pain and neck pain [30], foot reflexotherapy for acute low back pain [26], and combination of Effleurage massage and slow deep breathing technique for menstrual pain [31]. Besides, it has been reported that Usik Wiwitan relaxation exercise, a traditional complementary medicine application, decreased systolic and diastolic blood pressures and increased quality of life scores in elderly people [32] and decreased the anxiety of primipara pregnant women [33]. Also, in a recent study, the back massage had a positive effect on reducing the postprandial blood glucose level in diabetic patients [34].

CONCLUSION

Foot reflexotherapy was beneficial and amazingly effective in patients with FMF attack. Therefore, it can be used safely.

REFERENCES

1. Otter S, Church A, Murray A, et al. The effects of reflexology in reducing the symptoms of fatigue in

- people with rheumatoid arthritis: A preliminary study. *J Alternative Compl Med* 2010; 16:1251-1252.
2. Ozdelikara A, Tan M. The effect of reflexology on chemotherapy-induced nausea, vomiting, and fatigue in breast cancer patients. *Asia Pac J Oncol Nurs* 2017; 4:241-249.
 3. Stephenson NL, Weinrich SP, Tavakoli AS. The effects of foot reflexology on anxiety and pain in patients with breast and lung cancer. *Oncol Nurs Forum* 2000; 27:67-72.
 4. Bakir E, Baglama SS, Gursoy S. The effects of reflexology on pain and sleep deprivation in patients with rheumatoid arthritis: A randomized controlled trial. *Complement Ther Clin Pract* 2018; 31:315-319.
 5. Embong NH, Soh YC, Ming LC, et al. Revisiting reflexology: Concept, evidence, current practice, and practitioner training. *J Tradit Complement Med* 2015; 5:197-206.
 6. Hayes JA, Cox C. Immediate effects of a five-minute foot massage on patients in critical care. *Complement Ther Nurs Midwifery* 2000; 6:9-13.
 7. Quinn F, Hughes CM, Baxter GD. Reflexology in the management of low back pain: A pilot randomised controlled trial. *Complement Ther Med* 2008; 16:3-8.
 8. Siev-Ner I, Gamus D, Lerner-Geva L, et al. Reflexology treatment relieves symptoms of multiple sclerosis: A randomized controlled study. *Mult Scler* 2003; 9:356-361.
 9. Unal C, Welcome MO, Salako M, et al. The effect of foot reflexotherapy on the dynamics of cortical oscillatory waves in healthy humans: An EEG study. *Compl Ther Med* 2018; 38:42-47.
 10. Dane S, Welcome MO. A case study: Effects of foot reflexotherapy on ADHD symptoms and enuresis nocturia in a child with ADHD and enuresis nocturia. *Complement Ther Clin Pract* 2018; 33:139-141.
 11. Isik B, Aydin D, Arslan M, et al. Reflexological therapy induces a state of balance in autonomic nervous system. *Clin Invest Med* 2015; 38:244-248.
 12. Arslan M, Yesilcam N, Aydin D, et al. Wet cupping therapy restores sympathovagal imbalances in cardiac rhythm. *J Alternative Compl Med* 2014; 20:318-321.
 13. Olanipekun A, Alhassan AK, Musa FH, et al. The effect of foot bath therapy on the dynamics of cortical oscillatory waves in healthy humans: An EEG study. *J Res Med Dent Sci* 2019; 7:57-61.
 14. Aydin D, Hartiningsih SS, Izgi MG, et al. Potential beneficial effects of foot bathing on cardiac rhythm. *Clin Invest Med* 2016; 39:48-51.
 15. Yamamoto K, Aso Y, Nagata S, et al. Autonomic, neuro-immunological and psychological responses to wrapped warm footbaths-A pilot study. *Complement Ther Clin Pract* 2008; 14:195-203.
 16. Cal E, Cakiroglu B, Kurt AN, et al. The potential beneficial effects of hand and foot bathing on vital signs in women with caesarean section. *Clin Invest Med* 2016; 39:86-88.
 17. <https://www.wma.net/policy/current-policies/>
 18. Marquart H. *Reflexotherapy of the Feet*. 2nd Edn Stuttgart, Germany: Thieme; 2016.
 19. Carles M, Pulcini A, Macchi P, et al. An evaluation of the brachial plexus block at the humeral canal using a neurostimulator (1417 patients): The efficacy, safety, and predictive criteria of failure. *Anesth Analg* 2001; 92:194-198.
 20. Hughes M, Smyth S, Lowe-Strong AS. Reflexology for the treatment of pain in people with multiple sclerosis: A double-blind randomised sham-controlled clinical trial. *Mult Scler* 2009; 15:1329-1338.
 21. Gunnarsdottir TJ, Peden-McAlpine C. Effects of reflexology on fibromyalgia symptoms: A multiple case study. *Complementary Ther Clin Pract* 2010; 16:167-172.
 22. Lee YM. Effects of self-foot reflexology on stress, fatigue, skin temperature and immune response in female undergraduate students. *J Korean Acad Nurs* 2011; 41:110-118.
 23. Dougans I. *The Complete Illustrated Guide to Reflexology: Therapeutic foot massage for health and well-being*. New York, USA: Barnes and Noble; 1999.
 24. Valiani M, Babaei E, Heshmat R, et al. Comparing the effects of reflexology methods and Ibuprofen administration on dysmenorrhea in female students of Isfahan University of Medical Sciences. *Iran J Nurs Midwifery Res* 2010; 15:371-378.
 25. Lee J, Han M, Chung Y, et al. Effects of foot reflexology on fatigue, sleep, and pain: A systematic review and meta-analysis. *J Korean Acad Nurs* 2011; 41:821-833.
 26. Dane S. The effect of foot reflexotherapy on acute low back pain: A pilot study. *J Res Med Dent Sci* 2019; 7:13-16.
 27. Kim JO, Kim IS. Effects of aroma self-foot reflexology massage on stress and immune responses and fatigue in middle-aged women in rural areas. *J Korean Acad Nurs* 2012; 42:709-718.
 28. Abdullahi F, Unal C, Welcome MO, et al. Beta and gamma eeg oscillatory waves of the frontal cortex increase after wet cupping therapy in healthy humans. *J Res Med Dent Sci* 2019; 7:123-130.
 29. Arslan M, Yaman G, Ilhan E, et al. Moving dry cupping therapy reduces upper shoulder and neck pain in office workers. *Clin Invest Med* 2015; 38:e217-e220.
 30. Arslan M, Gokgoz N, Dane S. The effect of traditional wet cupping on shoulder pain and neck pain: A pilot study. *Complement Therapies Clin Practice* 2016; 23:30-33.
 31. Ariani D, Hartiningsih SS, Sabarudin U, et al. The effectiveness of combination effleurage massage and slow deep breathing technique to decrease menstrual pain in university students. *J Res Med Dent Sci* 2020; 8:79-84.
 32. Hartiningsih SS, Utomo B, Damayanti R, et al. Effectiveness and practicality of Usik Wiwitan relaxation to improve quality of life in elderly with hypertension in West Java. *J Res Med Dent Sci* 2020; 8:10-16.

33. Hartiningsih SS, Suryani, Hernawati Y, et al. Usik Wiwitan relaxation for psychological wellbeing among primipara pregnant women in Bandung, Indonesia. *J Res Med Dent Sci* 2020; 8:44-48.
34. Isworo A, Ekowati W, Dane S. Back massage as an adjunctive nursing intervention for management of postprandial blood glucose level in diabetic patients: A randomized controlled trial. *J Res Med Dent Sci* 2020; 8:68-73.