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The Effect of Aromatherapy on Hemodialysis-Related Nausea: A Case Report

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Abstract

BACKGROUND: After hemodialysis, complications may occur and one of them that problematic is hemodialysis-related nausea. Information is still unclear about aromatherapy concerning nausea-related to hemodialysis. This study aimed to describe the effect of aromatherapy on nausea after hemodialysis procedures.

CASE PRESENTATION: A 51-year-old female, undergoing routine hemodialysis, experienced severe hemodialysis-related nausea. Her nausea occurred a day after dialysis and existed for 3–4 days and this repeated as a cycle that affected her appetite, food intake, and general condition. The daily measurements of nausea used the visual analog scale and the nausea severity scale before and after the intervention. In addition, a manual book with a packet containing nausea education, protocol of intervention, and monitoring sheets, was provided. For two weeks, the application of two drops of lavender aromatherapy was given on a humid cotton swab and inhaled for 5 min. In addition, education explained oral hygiene using warm water when waking up in the morning and before eating food. There was a decrease in the intensity of nausea from severe to none based on daily measurements and from severe nausea (score: 21) to moderate nausea (score: 10) after the 2-weeks intervention. Thus, the patient could enjoy eating without any uncomfortable feeling of nausea.

CONCLUSION: Lavender aromatherapy was demonstrated as a complementary therapy in overcoming nausea after dialysis among CKD patients. This report could provide a novel therapeutic modality for hemodialysis patients suffering hemodialysis-related nausea.

Introduction

The incidence of patients using hemodialysis in the world is estimated to have reached 3.5 million by 2020 [1]. The renal association recommends that hemodialysis should be performed 3 times a week with duration of 3–4 h [2], while it is performed twice a week with duration 4–5 h in Indonesia according to the Indonesian renal association [3]. Although hemodialysis is an effective therapy, it causes complications such as hypotension, hypertension, chest pain, pruritus, nausea and vomiting, muscle cramps, dyspnea, and headaches [4].

The incidence of nausea-related to hemodialysis varies. About 12.5–28.3% of patients undergoing hemodialysis report hemodialysis-related nausea [4], [5]. Nausea that occurs after dialysis causes discomfort, fluid imbalance, decreases appetite, food intake, body weight, and causes dehydration when vomiting [4]. The non-pharmacological therapy to reduce nausea is applied as complementary alternative therapy particularly for outpatients or 1-day clinics such as the dialysis unit. It includes dietary restriction, avoiding spicy foods, strong aroma or high-fat foods, frequent eating with small amount, maintaining oral hygiene, relaxation, and aromatherapy [6]. Aromatherapy has been applied to patients undergoing chemotherapy and post-operative patients with nausea, but there is no current evidence for hemodialysis patients. The previous research showed that aromatherapy was useful to reduce nausea and vomiting, especially ginger and lavender aromatherapy. The ginger and lavender aromatherapy is demonstrated to be soothing and has significant impact on reducing nausea level. Other aromatherapies (i.e., roses) were also used in the previous research, but it did not show significant impact [7]. The selection of aromatherapy is based on the previous research's results and patient preferences. There is no information about the effect of aromatherapy on hemodialysis-related nausea, which makes this case report important. Thus, this case report aimed to identify the beneficial effects of aromatherapy on hemodialysis-related nausea in a female hemodialysis patient.

Case Report

A 51-years-old female, Muslim housewife patient, is living in Indonesia and was diagnosed with stage V renal failure due to high urea and creatinine levels. At the beginning, she refused hemodialysis, but then experienced severe nausea, vomiting, and diarrhea. The patient admitted to hospital due to her high urea and creatinine levels and operation of AV fistula insertion was performed in her left hand. The patient has diabetes and hypertension for 10 years beside hemodialysis for twice a week. The AV fistula indicated good condition, clean, well-functioning, and adequate thrill.

Initially, the patient complained of nausea in every morning, but no vomiting. Nausea had arisen 1 day after dialysis and existed for 3–4 days. Nausea was measured the nausea severity scale/NSS [8] and visual analog scale/VAS [9], and she reported severely nauseous and suffered for almost the past 2 weeks, which continuously existed during the day for 1–4 h with heavy intensity (NSS = 21). No specific treatment is done when nauseous and she only waits until disappeared although it takes several hours with severe abdominal discomfort, and limited food intake. She only consumes food with a small portion twice a day, maximum of four spoons. The physical examination results found weakness and exhaustion, pale conjunctiva, and non-energized and rounded belly. Nausea was measured before and after intervention through direct interview. The daily basis of VAS was used to evaluate the hemodialysis-related nausea in manual book to record her complaints for 2 weeks.

Therapeutic intervention

The patient received clonidine HCl® 0.15-mg/8h due to her nausea. For the hemodialysis-related nausea, we provided aromatherapy and oral hygiene education to clean her mouth using warm water or mouthwash when waking up and before eating food. The lavender and ginger aromatherapy was available and she choose the lavender aromatherapy. The aromatherapy was provided as an essential oil 10-ml, 0.34-oz (PT Tri Chemindo Ampuh, Indonesia). The protocol of application aromatherapy was developed as a previous study [7] for 2 weeks. The protocol was available as described below:

1. Prepare the cotton, water, and the essential oil;
2. If feel nausea, soak the cotton with water, then squeeze it until it is gone;
3. Put two drops of essential oil on a cotton that has been moistened with water;
4. Inhale for 5 min in relaxed manner;
5. Evaluate nausea at 15 and 40 min after the application of essential oil.

During the intervention, family members assist and prepare the aromatherapy as the protocol. The information of the protocol was provided in the manual book and available to re-read as needed.

Patient outcomes

During the 2 weeks intervention, the patient was monitored in each dialysis session. After the intervention, all data were collected and analyzed to identify the effect on hemodialysis-related nausea (Supplement Tables 1 and 2). During the treatment, we recorded the vital sign and data related hemodialysis (Supplement Figure 1). In general, there were no differences between before and after dialysis. During the observation, the ultrafiltration volume fluctuated from 1000 to 2300 cc with an intradialytic weight gain of 0–1.9 kg. The dry weight indicated gradually rising from 48.3 to 50.2 kg while the kt/v was slightly climbing (1.75–1.86). The patient expressed delighted due to receiving lavender aromatherapy and oral hygiene education. She reported that her meal portion had increased due to nausea reduction and she can enjoy her meal.

Discussion

This report showed a decreasing of the intensity of the hemodialysis-related nausea at daily basis VAS from severe to none and before (NSS = 21, severe) and after intervention (NSS = 10, moderate). Lavender aromatherapy is often used in clinical settings, such as those for reduction of anxiety and pain [10]. However, the detailed mechanism of lavender action in aromatherapy remains unclear. Several studies have shown it potentially inhibits nausea through anticholinergic, antihistamine and anti-inflammatory activities, and works in conjunction with antiemetic drugs [11]. Aromatherapy works through the principle of relaxation and distraction. When inhaling the aromatherapy, the stimuli of smell will be transmitted through the olfactory nerve pathway to the limbic system, which will be processed in the central nervous system [12]. The limbic system, which is stimulated by aroma, will release neurochemicals that can reduce pain and release hormones that calm and comfort [13]. Stimulation of the trigeminal nerves on the tip of the nose can produce warming or cooling sensations [12]. The previous research indicated lavender aromatherapy was effective to reduce anxiety, fatigue, depression, pain, and improve psychological well-being and mood among patients undergoing hemodialysis [14].

Dialysis patients who suffer nausea will experience a negative impact on their daily intake, which can potentially lead to malnutrition and anemia. Increased food intake has an effect on increasing

hemoglobin levels in the blood [15]. The more nauseous the reaction is the less food intake for patients undergoing hemodialysis and impact to their quality of life [16]. In this case report, there were no changes in vital signs before and after hemodialysis. This finding was in line with the previous study that no significant relationship between nausea, changes in blood pressure, pulse variation, ultrafiltration volume, and weight gain after hemodialysis [17], [18]. The patient's blood pressure tended to rise after dialysis and the ultrafiltration volume fluctuated from 1000 to 2300 with a weight gain of 0–1.9 kg. The amount of ultrafiltration volume affects blood pressure. It was in line with the previous study that excess ultrafiltration was possibly related to the occurrence of intradialytic hypertension [19].

Conclusion

Aromatherapy is a non-invasive and affordable complementary alternative therapy. Inhalation of an application of two drops of aromatherapy on a cotton swab showed a decreasing in the intensity of hemodialysis-related nausea. This case report of aromatherapy describes an option for health-care providers or families to treat hemodialysis-related nausea in patients undergoing hemodialysis.

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References

1. Asgari MR, Soleimani M. Intensive Care in ICU, CCU and Dialysis Ward. 28th ed. Tehran: Boshra; 2014.
2. Ashby D, Borman N, Burton J, Corbett R, Davenport A, Farrington K, *et al*. Renal association clinical practice guideline on hemodialysis. BMC Nephrol. 2019;20(1):379. https://doi.org/10.1186/s12882-019-1527-3
   PMid:31623578
3. PERNEFRI. 10th Report of Indonesian Renal Registry; 2017. Available from: http://www.indonesianrenalregistry.org. [Last accessed on 2020 Oct 08].
4. Asgari MR, Asgari F, Ghods AA, Ghorbani R, Motlagh NH, Rahei F. Incidence and severity of nausea and vomiting in a group of maintenance hemodialysis patients. J Renal Inj Prev. 2017;6(1):49-55. https://doi.org/10.15171/jrip.2017.09
   PMid:28487872
5. Aisara S, Azmi S, Yanni M. Gambaran klinis penderita penyakit ginjal kronis yang menjalani hemodialisis di RSUP Dr. M. Djamil Padang. J Kesehatan Andalas. 2018;7(1):42-50.
6. Evans A, Malvar J, Garretson C, Kolovos P, Nelson MB. The use of aromatherapy to reduce chemotherapy-induced nausea in children with cancer: A randomized, double blind, placebo-controlled trial. J Pediatr Oncol Nurs. 2018;35(6):392-98. https://doi.org/10.1177/1043454218782133
   PMid:29947285
7. Karaman S, Karaman T, Tapar H, Dogru S, Suren M. A randomized placebo-controlled study of aromatherapy for the treatment of postoperative nausea and vomiting. Complement Ther Med. 2019;42:417-21. https://doi.org/10.1016/j.ctim.2018.12.019
   PMid:30670276
8. Russell AC, Stone A, Wang A, Walker LS. Development and validation of a Nausea Severity Scale for assessment of nausea in children with abdominal pain-related functional gastrointestinal disorders. Children (Basel). 2018;5(68):1-8. https://doi.org/10.3390/children5060068
   PMid:29865219
9. Boogaerts JG, Vanacker E, Seidel L, Albert A, Bardiau FM. Assessment of postoperative nausea using a visual analogue scale. Acta Anaesthesiol Scand. 2000;44(4):470-4. https://doi.org/10.1034/j.1399-6576.2000.44420.x
   PMid:10757584
10. Karaman T, Karaman S, Dogru S, Tapar H, Sahin A, Suren M, *et al*. Evaluating the efficacy of lavender aromatherapy on peripheral venous cannulation pain and anxiety: A prospective, randomize study. Complement Ther Clin Pract. 2016;23:64-8. https://doi.org/10.1016/j.ctcp.2016.03.008
    PMid:27157961
11. Acikalin A, Gulen M, Kara B, Icme F, Satar S. Anticholinergic syndrome and supraventricular tachycardia caused by lavender tea toxicity. Keto J Med. 2012;61(2):66-8. https://doi.org/10.2302/kjm.61.66
    PMid:22760025
12. Ghani RM, Ibrahim AT. The effect of aromatherapy inhalation on nausea and vomiting in early pregnancy: A pilot randomized controlled trial. J Nat Sci Res. 2013;3(6):10-22.
13. Gaware VM, Nagare R, Dhamak KB, Khadse AN, Kotade KB, Kashid VA, *et al*. Aromatherapy: Art or science. Int J Biomed Res. 2013;4(2):74-83. https://doi.org/10.7439/ijbr
14. Nesami MB, Shorofi SA, Nikkhah A, Moghaddam HR, Mahdavi A. Effect of lavender aromatherapy on well-being among hemodialysis patients: A randomized clinical trial. Pharm Biomed Res. 2017;4(2):18-22.
15. Qureshi AR, Durrani N, Asif N. Vital sign variation with complication during dialysis among end-stage renal disease patients. J Coll Physicians Surg Pak. 2018;28(6):431-5. https://doi.org/10.29271/jcpsp.2018.06.431
    PMid:29848417
16. Paramitha FZ, Perdana M, Wicaksana AL. Quality of life among patients with predialysis chronic kidney disease in RSUP Dr. Sardjito Yogyakarta. Enfermeria Clinica. 2021;31 Suppl 3:511-4. https://doi.org/10.1016/j.enfcli.2020.10.041
17. Kovacic V, Roguljic L, Kovacic V, Bacic B, Bosnjak T. Ultrafiltration volume is associated with changes in blood pressure in chronically hemodialyzed patients. Ren Fail. 2003;25(6):945-51. https://doi.org/10.1081/JDI-120026029
    PMid:14669853
18. Wicaksana AL, Yen M, Wang ST, Fetzer SJ. Determinants

of high-sodium food intake among Indonesian patients with hypertension. J Cardiovasc Nurs. 2021;36(6):582-8. https://doi.org/10.1097/JCN.0000000000000743
PMid:32796228

19. Kandarini Y, Widiana R, Suwitra K. Association between ultrafiltration volume and intradialytic hypertension in maintenance hemodialysis. Medicina. 2017;48(2):152-6. https://doi.org/10.15562/medi.v48i2.47

Supplement Table

Supplement Table 1: Result of daily nausea monitoring with VAS

Date*	First onset	15 min post-intervention	40 min post-intervention
3	Severe (8.9)	Severe (8.6)	Severe (8.3)
4	Severe (7.3)	Severe (7.1)	Moderate (6.7)
5	Severe (7.6)	Severe (7.3)	Moderate (6.9)
6#	Moderate (5.5)	Moderate (5.3)	Moderate (4.9)
7	Severe (7.1)	Moderate (6.9)	Moderate (6.4)
8	Moderate (5.9)	Moderate (5.7)	Moderate (5.4)
9#	Moderate (5.3)	Moderate (5.1)	Moderate (4.7)
10	Moderate (5.5)	Moderate (5.1)	Moderate (4.7)
11	Moderate (4.1)	Mild (3.9)	Mild (3.6)
12	Moderate (4.2)	Mild (3.9)	Mild (3.6)
13#	Moderate (4.8)	Moderate (4.5)	Moderate (4.1)
14	Mild (4)	Mild (3.7)	Mild (3.3)
15	Mild (2.9)	Mild (2.2)	Mild (1.8)
16#	Mild (1.3)	Mild (1.1)	No nausea (0.8)

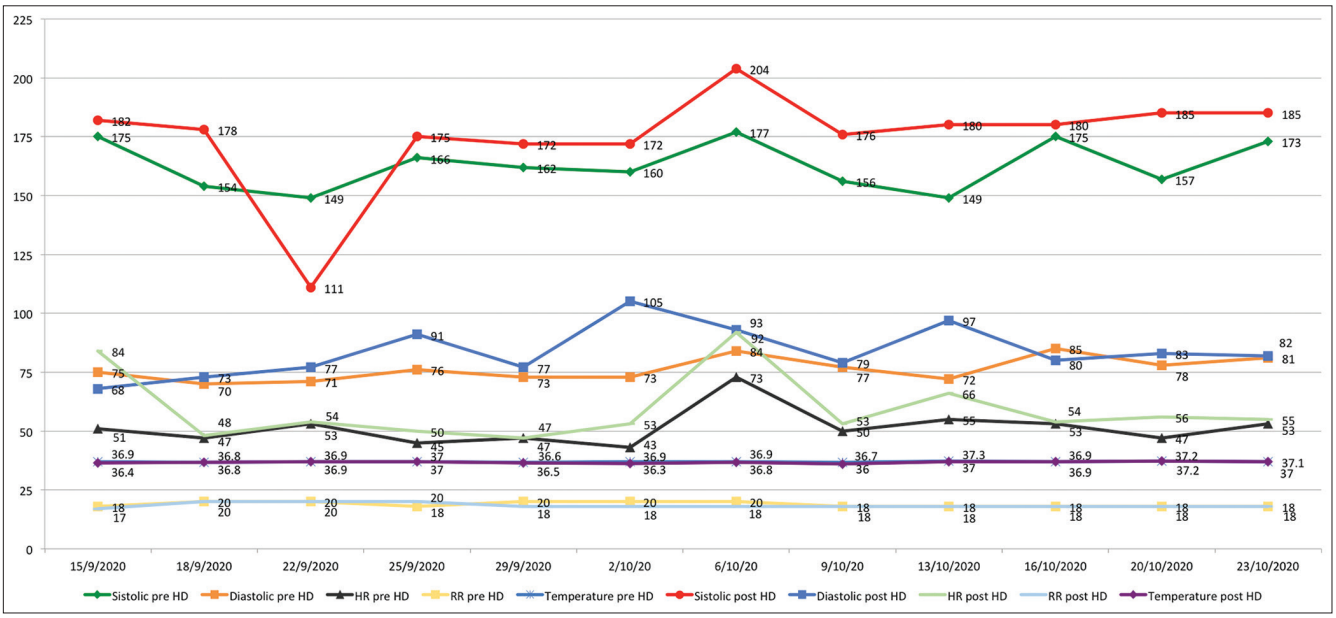
*On October 2020, #Dialysis time, VAS=Visual analog scale.

Supplement Table 2: Result of nausea measurement with NSS

Item	Pre-intervention	Post-intervention
Nausea frequency	Every day (4)	Most days (3)
Daily frequency of nausea episode	Constant during the day (4)	Once a day (1)
Nausea duration	1 – 4 h (3)	Half an hour to an hour (2)
Typical nausea intensity	10	4
Total score	21	10

NSS=Nausea severity scale.

Supplement Figure



Supplement Figure 1: Vital sign record during the treatment. HD: Hemodialysis, HR: Heart rate, and RR: Respiratory rate