http:// ijp.mums.ac.ir
Review Article (Pages: 11041-11047)

Investigating the Effect of Non-Pharmacological Treatments on Reduction of Breast Engorgement in Breastfeeding Women: A Review Study

Parisa Razmjouei[1], Sara Khashkhashi Moghaddam[2], Omolbanin Heydari[3], Behnoush Mehdizadeh[4], Malihe Pouredalati[3], Mohammad Tabarestani[5], Zahra Ramazanian Bafghi[3], Roozbeh Nasibeh[6], *Somayeh Moeindarbary[7]

[1]Shahid Faghihi Hospital, Department of Gynecology and Obstetrics, Shiraz University of Medical Sciences, Shiraz, Iran. [2]Anesthesiologist, Department of Anesthesiology, Mashhad University of Medical Sciences, Mashhad, Iran. [3]Students Research Committee, Razi School of Nursing and Midwifery, Kerman University of Medical Sciences, Kerman, Iran. [4]Department of Pathology, Mashhad University Of Medical Science, Mashhad, Iran. [5]Medical Student, Student Research Committee, Mazandaran University of Medical Sciences, Sari, Iran. [6]Mother and Child Welfare Research Center, Hormozgan University of Medical Sciences, Bandar Abbas, Iran. [7]Assistant Professor, Department of Obstetrics and Gynecology, Neonatal and Maternal Research Center, Mashhad University of Medical Sciences, Mashhad, Iran.

Abstract

Background: Breast engorgement is a common postpartum problem that has been identified as the third maternal factor that leads to a decrease or discontinuation of breastfeeding and breast abscess. Considering the side effects of chemical drugs during lactation, the aim of the present review study was to investigate the effect of non-pharmacological treatments on reduction of breast engorgement in breastfeeding women.

Materials and Methods: The search process was to find the clinical trials regarding the correlation of preterm infant weight with aromatherapy on different electronic databases, including Cochrane, Web of Science, EMBASE, Scopus, and Medline (via PubMed). No time and language restrictions were considered in this study.

Results: According to the results, a significant decrease was seen in breast severity of engorgement in hollyhock compress ($p<0.001$); in a study, Ginger compression group was more effective than control group ($p<0.001$). In addition, the herbal compress was more effectiveness than hot compress groups. In another study, the cabbage leaves and gel packs groups reduced significantly in pain compared to the control group, In a study, Intermittent compress (hot and cold) was more effective than acupressure in decreasing the intensity of breast hyperemia in lactating women. Some studies showed that cabbage is beneficial on breast engorgement and some studies did not find any significant difference between studies.

Conclusion: Hollyhock, Ginger, Herbal compress and Cabbage leaves were effective for treatment of breast engorgement in Lactating women.

Key Words: Breast engorgement, Breastfeeding, Non-pharmacological treatments.

*Please cite this article as Razmjouei P, Khashkhashi Moghaddam S, Heydari O, Mehdizadeh B, Pouredalati M, Tabarestani M, et al. Investigating the Effect of Non-Pharmacological Treatments on Reduction of Breast Engorgement in Breastfeeding Women: A Review Study. Int J Pediatr 2020; 8(3): 11041-47. DOI: **10.22038/ijp.2020.46493.3780**

Corresponding Author:

Somayeh Moeindarbary, MD, Department of Obstetrics and Gynecology, Neonatal and Maternal Research Center, Mashhad University of Medical Sciences, Mashhad, Iran.

Email: moeins@mums.ac.ir

Received date: Nov.23, 2019; Accepted date: Jan. 22, 2020

1- INTRODUCTION

Breastfeeding is the best method to help mothers stay healthy and have a healthy baby. World Health Organization (WHO) recommends that infants should be exclusively breastfed for the first six months of life. However, some of the problems occurring during the early postpartum period have a negative effect on breast sucking and breastfeeding. Therefore, early detection and resolution of breastfeeding problems seen in the postpartum period is essential for maternal and infant health (1). Factors affecting breastfeeding in the first week postpartum include breastfeeding problems such as nipple shape, breast pain or injury, inadequate milk supply and breast engorgement. Studies show that approximately 92% of primiparous mothers experience changes in breastfeeding problems. These factors can reduce successful breastfeeding and maternal breastfeeding self-confidence (2).

Approximately two days after the baby is born, the mother's breasts are full of milk; this is a normal physiological process where the breasts become heavy and swollen, however, breasts should not be painful or hard under normal conditions. Breast engorgement occurs when a mother makes more milk than her baby uses. Full breasts can lead to problems such as blocked milk ducts, breast infection, and lack of effective milk supply (3). Breast engorgement is a common physiological problem during lactation that may cause breast swelling, pain, fever, and eventually cessation of breastfeeding in the early postpartum period (4). It generally occurs 2 to 3 days after birth and affects more than two-thirds of women by day 5; however, some women experience this problem on days 9 and 10 postpartum (5). Breast engorgement may affect the areola or the main body of the breast (peripheral engorgement) and may affect only one breast or both. Engorged nipple may make the baby unable to breastfeed successfully and this may worsen the engorgement. In the case of concerns about sufficient milk supply, or breast pain and swelling, the problem may become complicated and discourage women from continuing breastfeeding. Women may also receive limited advice and support from health professionals; and the situation may get worse in the case of being unaware of how to manage these conditions (6).

Studies show that the best engorgement-related intervention is prevention. Frequent breastfeeding (1-12 times) in 24 hours, on-time feeding, and kangaroo care immediately after delivery, avoid limiting the frequency of breastfeeding, mother-infant room-sharing, and training proper breastfeeding techniques have been identified as engorgement prevention measures. Suggested breast engorgement medications include the use of diuretics, anti-inflammatory drugs such as denizen, bromelain, acetaminophen, ibuprofen, etc. (7-10). However, these medications can have side effects. Some of the recommended non-pharmacological interventions for breast engorgement include training proper breastfeeding, frequent breastfeeding and warm baths, use of cold compresses on the breasts during breastfeeding intervals, use of warm compresses before breastfeeding, and breast massage.

Considering the side effects of chemical drugs, medical science researchers today are seeking the easiest, least complicated, and most effective treatments, so, they have resorted to complementary or alternative medicine. One of complementary strategies is massage therapy. On the other hand, the use of herbal medicines, as an alternative therapy in most medical systems in the world, is being discussed today. Medications and herbal medicines have been used for centuries to improve the health status of women during pregnancy, childbirth, and

breastfeeding (5). Considering side effects of medications, various herbs such as cauliflower, mentha piperita L., salvia officinalis, ginger, and alcea have been recommended for the treatment of engorgement in either oral form or oil massage (2, 11). Currently, there are several treatments to reduce breast engorgement that, given their conversional effects, there is a lack of sufficient evidence to recommend a specific treatment. Therefore, the aim of the present review study was to evaluate the effect of herbal treatments on the reduction of breast engorgement in breastfeeding women.

2- MATERIALS AND METHODS

2-1. Search strategy

In this review, all clinical trials evaluating the effect of Herbal medicine, Brassica, Cabbage, Ginger, Hollyhock, Malvaceae on breast engorgement in lactating women were searched on the electronic databases of Scopus, EMBASE, Cochrane, Web of Science and Medline (via PubMed) with no language or time restrictions (till October 2019) using the combination keywords of (Breast Hyperemia OR, Breast Engorgement OR Treatment OR Therapeutics OR Therapy) AND (Herbal Medicine OR Herbal) AND (Brassica OR Cabbage OR Ginger, Hollyhock OR Malvaceae), and their Persian synonyms and all their possible combinations, were searched in the national databases (Magiran, SID, and Iran.Doc). Two independent researchers performed the search process and a supervisor judged any disagreement in this regard.

2-2. Included studies

Randomized controlled trials (RCT), clinical studies both randomized and nonrandomized either retrospective or prospective. Due to the limited number of published RCT in the literature, other types of clinical studies were included. Pilot, preliminary and case report studies were not included due to limited sample size and higher risk of bias. Studies published in Persian and English up to the end of October 2019.

2-3. Selection process

Two reviewers, who reviewed initially the abstracts of searched articles and then downloaded their full text to review carefully, chose the relevant studies independently. Finally, the articles that met the inclusion criteria were enrolled in the systematic review, and their used relevant references were reviewed to find further studies. The third party judged any disagreement.

3- RESULTS

In this review we find cabbage, Hollyhock, Ginger and Herbal tea were more effective for treatment of breast engorgement in Lactating women.

3-1. Cabbage

In a controlled clinical trial, Lim et al. compared the impacts of early breast care (EBC), and cabbage compression early breast care (CCEBC) on alleviating the breast pain and breast hardness with general nursing breast care (GNBC) among 60 primiparous women following cesarean section, who were allocated to three intervention groups of CCEBC, EBC and GNBC. All interventions lasted over 10 minutes prior to breast feeding from the second day to the fourth day after delivery. A significant breast hardness relief was reported in the CCEBC group when comparing to the both EBC and GNBC groups. All three groups showed no significant difference in both core body and breast skin temperature (11). In a study of Gagandeep et al., the research units were 60 postnatal mothers within two experimental (receiving cabbage leaves),

and control (receiving routine care) groups of 30. According to the findings, 86.20% of the experimental group experienced no breast tenderness at the third day in comparison with 58.62% of control group, thereby suggesting the effectiveness of cabbage leaves in the alleviation of breast tenderness (12). In Wong et al.'s study, 227 mothers with breast engorgement were randomly allocated into the groups of cold gel packs, cold cabbage leaves and control. A significant decrease was observed following half an hour after first administration of cabbage leaves at all intervention periods in the gel packs and cabbage leaves groups when comparing to the control group (4). Thomas et al. compared the effects of chilled cabbage leaves and routine care (warm compress) on the alleviation of breast engorgement in the postnatal mothers. They showed more effectiveness of the warm compress ($p=0.001$) in comparison with the chilled cabbage leaves in relieving the breast engorgement (13).

3-2. Hollyhock

In the Khosravan et al.'s study, the research units consisting of females with breast engorgement (n= 40) were allocated in two groups of intervention (hollyhock leaf compress), and control. The results demonstrated that the total severity of breast engorgement in the intervention group was significantly different from the control group ($p<0.001$). Moreover, the breast engorgement was improved following the administration of hollyhock leaf compress plus routine relevant interventions (5).

3-3. Ginger

The second research randomly divided the study mothers to intervention and conventional care groups. The intervention group received the ginger warm compression three times a day for two days. The mean total post-intervention engorgement in right and left breast showed a reduction in both groups, but the severity of breast engorgement was significantly higher in the intervention group when comparing with the control group ($p<0.001$) (2).

3-4. Herbal compress

The third study was a randomized controlled trial on the postpartum mothers with the breast engorgement in two groups of herbal or hot compress interventions. The findings indicated more effectiveness in the reduction of breast engorgement pain in the herbal group than in the hot compress group (14).

4- DISCUSSION

The aim of the present review study was to evaluate the effect of herbal treatments on the reduction of breast engorgement in breastfeeding women. The results showed that some herbs such as herbal compresses, ginger, hollyhock and cabbage are useful for the treatment of breast engorgement in breastfeeding women. Lactation is a normal physiological process that begins in the sixteenth week of pregnancy and continues after childbirth regardless of the outcome of the birth. Milk secretion is a complex mechanism. High levels of estrogen, progesterone, and prolactin stimulate the anatomy of the breasts during pregnancy. Prolactin triggers the synthesis of lactose in the breasts while estrogen and progesterone stop it during pregnancy. Estrogen and progesterone levels drop dramatically after birth, which causes prolactin to initiate milk production. Prolactin concentrations are typically high for weeks postpartum even in women who are not breastfeeding; however, these processes do not lead to painful and hard breasts. The inadequate milk removal from the breasts is mainly due to breast engorgement during breastfeeding. Engorgement and insufficient milk secretion, can cause problems such as milk duct obstruction, mastitis, and decreased

milk secretion (15). A sudden increase in milk volume during pregnancy, lymph and artery density, and an increased fluid in the interstitial space cause breast engorgement, if not treated on time, it may eventually lead to breast abscesses, leading to discontinuation of breastfeeding, and antibiotic treatments (16).

Hollyhock (Althaea officinalis L.) is one of the medicinal herbs that has been used as a treatment since ancient times. The leaves of this plant as well as its roots are used as medicine. The roots contain flavonoids and glycosides, and leaves contain coumarin scopoletin. It also has a potential therapeutic effect because of its valuable secondary metabolites. Besides, its antibacterial and anti-inflammatory activities, as well as its role in mucosal transfer, and polysaccharide adhesion have been reported in previous studies (17).

In fact, hollyhock leaves consist of mucilage, polysaccharide, flavonoids, phenolic acid, tannins, and fats. Precious studies have also shown that topical use of its derivatives is useful for the treatment of breast engorgement, nipple fissure, and blocked milk ducts and its oral administration has been recommended for increased lactation (5). Khosrsvan et al. (2015) conducted a study on the effect of hollyhock leaf compresses as well as hot and cold compresses on breast engorgement of breastfeeding women. The results showed that hot and cold compresses alone and in combination with hollyhock leaf compress affect breast engorgement; however, the use of hollyhock leaf compress can improve symptoms of breast engorgement faster (5). Cabbage (Brassica oleracea L. var. Capitata) is a vegetable that is readily available worldwide and contains phytochemicals with antioxidant and anti-inflammatory potential. Studies on human breast cells showed that cabbage extract increased AhR ligands and reduced MCF10A cells, and its anti-inflammatory property has been considered a key principle in the use of cabbage compresses to overcome breast engorgement during breastfeeding (18). Furthermore, the sulfur compound found in cabbage leaves has antiseptic, antibacterial, and anti-inflammatory properties that justify its use to relieve pain and swelling (4).

Wong et al. (2017) carried out a study on the effect of cold cabbage leaves and application of cold gel packs on pain, hardness and heat induced by breast engorgement, breastfeeding duration and satisfaction in 227 mothers with breast engorgement 14 days postpartum. They showed that both cabbage leaf and cold gel reduced breast hardness and pain, but had no effect on body temperature and breastfeeding duration, whereas cold cabbage leaves and cold gel packs can relieve the pain and hardness; however, cabbage leaves have been more effective in treating breast engorgement and increased maternal satisfaction (4).

A study was carried out on the effect of cabbage leaf on breast engorgement in 60 mothers postpartum; 30 in the experimental group and 30 in the control group. Results showed that both breast sensitivity and consistency decreased significantly in the intervention group as compared to the control group (19). Ginger has anti-inflammatory, anti-bacterial, anti-fever and anti-swelling as well as antiangiogenic effects and its compress has been recommended for breast pain and oral use for increasing milk production (2). Previous studies reported many beneficial effects of ginger, including anti-inflammatory, antioxidant and anti-nausea properties. Ginger also dilates the arteries by warming the surrounding environment and the result is a mechanism used to increase milk production by increasing blood supply to breasts (20). In a study of the effect of treating breast engorgement using warm ginger compress on breastfeeding self-efficacy in 76

breastfeeding women, Monazzami et al. (2019) showed that warm ginger compresses improved breast engorgement symptoms faster and increased breastfeeding self-efficacy score (2).

Ketsuwan et al. (2018) studied the effect of herbal compresses on postpartum breast engorgement. They used compact herbal balls containing dried herbs such as *Z. cassumunar* Roxb. rhizomes (90.5 g), *C. longa* L. rhizomes (18.2 g), *Cymbopogon citratus* (DC) Stapf leaves and leaf sheaths (18.2 g), *Acacia concinna* (Willd.) DC leaves (18.2 g), *Tamarindus indica* L. leaves (54.3 g), *Citrus hystrix* DC peels (36.2 g), *Blumea balsamifera* (L.) DC leaves (5.4 g), salt (3.6 g), and camphor (5.4 g). The herbal balls were steamed for 20 minutes and used to treat breast engorgement. The results of this study showed that the herbal compress was more effective in the treatment of breast engorgement than warm compress (14).

4-1. Study Limitations

A four-degree scale is used to assess the severity of breast fissure. Grade 1: Minimal breast sensitivity, minimal tolerance and minor edema. Grade 2: Breasts are somewhat painful, moderate in size and mildly swollen. Grade 3: Breasts are very painful, large in size and moderately swollen. Grade 4: Breasts are very painful with a specific size and severely swollen (14). One of the limitations of the present study is that different articles have used different questionnaires to classify degree of breast engorgement.

5- CONCLUSION

Hollyhock, Ginger, Cabbage leaves, and Herbal compress, [herbal compress ball weighed 250 g and contained dried herbs that included the following: Z. cassumunar Roxb. Rhizomes (90.5 g), C. longa L. rhizomes (18.2 g), Cymbopogon citratus (DC) Stapf leaves and leaf sheaths (18.2 g), Acacia concinna (Willd.) DC leaves (18.2 g), Tamarindus indica L. leaves (54.3 g), Citrus hystrix DC peels (36.2 g), Blumea balsamifera (L.) DC leaves (5.4 g), salt (3.6 g), and camphor (5.4 g)], were effectiveness for reduced pain and treatment of breast engorgement in Lactating women; however, Intermittent compress (hot and cold) is more effective than acupressure in decreasing of the intensity of breast hyperemia.

6- CONFLICT OF INTEREST: None.

7- REFERENCES

1. Karaçam Z, Sağlık M. Breastfeeding problems and interventions performed on problems: systematic review based on studies made in Turkey. Turkish Archives of Pediatrics/Türk Pediatri Arşivi. 2018;53(3):134.

2. Monazzami M, Yousefzadeh S, Rakhshandeh H, Esmaeili H, Afiat M. The Effect of Hot Ginger Compress (Zingiber officinale) on the severity of breast Engorgement in Lactating Women. The Iranian Journal of Obstetrics, Gynecology and Infertility. 2019;21(12):77-84.

3. Mangesi L, Zakarija-Grkovic I. Treatments for breast engorgement during lactation. Cochrane Database Syst Rev. 2016;(6):CD006946.

4. Wong BB, Chan YH, Leow MQH, Lu Y, Chong YS, Koh SSL, et al. Application of cabbage leaves compared to gel packs for mothers with breast engorgement: Randomised controlled trial. Int J Nurs Stud. 2017;76:92-99. doi: 10.1016/j.ijnurstu.2017.08.014. Epub 2017 Aug 31.

5. Khosravan S, Mohammadzadeh-Moghadam H, Mohammadzadeh F, Fadafen SAK, Gholami M. The effect of Hollyhock (Althaea officinalis L) leaf compresses combined with warm and cold compress on breast engorgement in lactating women: A randomized clinical trial. Journal of evidence-based complementary & alternative medicine. 2017;22(1):25-30.

6. Kamali Moradzade M, Ahmadi M, Heshmat R, Akbarzade Baghban A. Comparing the effect of acupressure and intermittent compress on the severity of breast hyperemia in lactating women. The Horizon of Medical Sciences. 2013;18(4):155-60.

7. Wight NE. Management of common breastfeeding issues. Pediatr Clin North Am 2001; 48(2):321-44.

8. Manna M, Podder L, Devi S. Effectiveness of hot fomentation versus cold compression on breast engorgement among postnatal mothers. Int J Nurs Res Pract 2016; 3(1):13-7.

9. Arora S, Vatsa M, Dadhwal V. A comparison of cabbage leaves vs. hot and cold compresses in the treatment of breast engorgement. Indian J Community Med 2008; 33(3):160-2.

10. Walls D. Herbs and natural therapies for pregnancy, birth and breastfeeding. Int J Childbirth Educ 2009; 24(2):29.

11. Lim A-R, Song J-A, Hur M-H, Lee M-K, Lee MS. Cabbage compression early breast care on breast engorgement in primiparous women after cesarean birth: A controlled clinical trial. International journal of clinical and experimental medicine. 2015;8(11):21335.

12. Gagandeep, Sagar Nidhi, Mamta, Kaur Jasbir. Efficacy of cabbage leaves in relief of breast engorgement among postnatal mothers. International Journal of Nursing Education. 2013;5(2):76-9.

13. Thomas AA, Chhugani M, Thokchom S. A Quasi-experimental Study to Assess the Effectiveness of Chilled Cabbage Leaves on Breast Engorgement among Postnatal Mothers Admitted in a Selected Hospital of Delhi. International Journal of Nursing and Midwifery Research. 2017;4(1):8-13.

14. Ketsuwan S, Baiya N, Paritakul P, Laosooksathit W, Puapornpong P. Effect of herbal compresses for maternal breast engorgement at postpartum: a randomized controlled trial. Breastfeeding Medicine. 2018;13(5):361-5.

15. Sereshti M, Nahidi F, Simbar M, Bakhtiari M, Zayeri F. An exploration of the maternal experiences of breast engorgement and milk leakage after perinatal loss. Global journal of health science. 2016; 8(9):234.

16. Berens P, Brodribb W, Medicine AoB. ABM Clinical Protocol# 20: engorgement, revised 2016. Breastfeed Med. 2016;11:159-63. doi: 10.1089/bfm.2016.29008.pjb. Epub 2016 Apr 12.

17. Shah SA, Akhtar N, Akram M, Shah PA, Saeed T, Ahmed K, et al. Pharmacological activity of Althaea officinalis L. Journal of Medicinal Plants Research. 2011;5(24):5662-66.

18. Siregar E, Hardjanti TS, editors. Non Pharmacological Treatments For Breast Engorgement: A Systematic Review. Proceedings of the International Conference on Applied Science and Health; 2019.

19. Gagandeep NS, Mamta JK. Efficacy of Cabbage Leaves in Relief of Breast Engorgement among Postnatal Mothers. International Journal of Nursing Education. 2013;5:76.

20. Paritakul P, Ruangrongmorakot K, Laosooksathit W, Suksamarnwong M, Puapornpong P. The effect of ginger on breast milk volume in the early postpartum period: A randomized, double-blind controlled trial. Breastfeeding Medicine. 2016;11(7):361-5.