ICASH-A113

THE EFFECT OF ANTIEMETIC FOR GALACTOGOGUE

Sukma Marthia Rahani*, Amal Chalik Sjaaf

Faculty of Public Health, University of Indonesia

Corresponding author's email: sukmaderajat123@gmail.com

ABSTRACT

Background: *Breastmilk provides nutrition that newborn and baby need during early stage of their lives. Breastmilk production can be increased by giving the mother oxytocin or prolactin enhancement that called galactogogue during breastfeeding. Giving galactogogue to mother bring side effect such as nausea, vomit, and insomnia. The example of galactogogue are domperidone and metoclopramide. Domperidone and metoclopramide not only useful to increase the breastmilk production as galactogogue but also can be used as antiemetic to reduce the effect in the galactogogue. This study aims to examine the effect of antiemetic for galactogogue during breastfeeding.*
Methods: *This study was a systematic review that used PRISMA guidelines. Data obtained from Electronic databases ProQuest and Google Scholar that published between 2015 and 2018. By using keywords such as effect, antiemetic, galactogogue to find the relevant journal.*
Results: *The search found 58 studies, of which 7 studies were relevant to analyze in this study. Majority of these studies used Randomized Control Trial (RCT) and 1 study used case study. Analysis of the studies found out that domperidone and metoclopramide can be used as antiemetic for galactogogue. Domperidone was not enter the blood circulation and did not interfere the breastmilk production*
Conclusion: *Domperidone and metoclopramide can be used as antiemetic for mother who need galactogogue treatment. Domperidone reduced the toxicity to mother and baby. The health providers should recommend domperidone and metoclopramide as galactogogue to mother who want to increase the breast milk production.*

Keywords: *Breast milk, galactogogue, antiemetic*

INTRODUCTION

Breastfeeding benefits for newborns and infants are well-documented. Breastfeeding provides infants with superior nutritional content that is capable of improving infant immunity and possible reduction in future health care spending. At the Innocenti Declaration in 1990, the World Health Organization (WHO) called for policies that would cultivate a breastfeeding culture that encourages women to breastfeed their children exclusively for the first 6 months of life and then up to 2 years of age and beyond [1]. Exclusive breastfeeding is defined as an infant's consumption of human milk with no supplementation of any type (no water, no nonhuman milk, and no foods) except for vitamins, minerals, and medications [2].

There have been many identified and studied nonpharmacological measures such as emotional support, kangaroo care, skin-to-skin contact, expressing breast milk at the infant's bedside, increasing pumping frequency, duration and types of mechanical expression that have been found to contribute to variable levels of success in augmenting the breast milk production in mothers of preterm infants. For those mothers in whom milk production has declined and is not responding to non-pharmacologic measures,

the use of galactogogues is often considered. Galactogogues are medications that induce lactation generally from exerting its effects through oxytocin or prolactin enhancement [3].

Galactogogues have commonly been used to increase low (or perceived low) milk production. Many breastfeeding medicine specialists and lactation consultants have recommended various drugs and herbs when other nonpharmacological measures have not resulted in an increase in milk volume production [4].

The primary galactogogues used today for prolactin enhancement are dopamine antagonists with the most widely studied being metoclopramide and domperidone. Domperidone is a potent dopamine D2 receptor antagonist and was developed and marketed as a prokinetic and antiemetic agent. By blocking dopamine D2 receptors in the anterior pituitary, domperidone stimulates the release of prolactin [3]. Lactating women with decreased milk supply who are unresponsive to nonpharmacologic measures to enhance lactation, should continue to consider domperidone at antiemetic doses [5].

METHODS

Search Strategy

Several search strategies are used to identify appropriate journal searches. Searching data and information via electronic, making the site as a data source. The source of data in this study conducted from electronic sources: ProQuest and Google Scholar. The data collected from the articles published between 2015 and 2018 and the search terms included: (1) effect, (2) antiemetic and (3) galactogogue. The results of the article search are used PRISMA instruments (Preferred Reporting Items for Systematic Reviews & Meta-Analyses) and used flowcharts prepared under the PRISMA 2009 checklist guidelines to set aside articles that do not match the identification, screening, eligibility criteria, and finally download the appropriate articles.

Inclusion and Exclusion Criteria

The inclusion criteria for this study were studies conducted between 2010-2018, explaining all about the antiemetic effect as galactogogue, and written in English. Criteria of exclusion is any study that doesn't match the criteria above.

RESULT

Used search engine with keyword "the effect of antiemetic for galactogogue "through ProQuest and Google Scholar, results obtained as many as 58 papers which are considered to be in accordance with the objectives of the study, then screened wether the title matches the theme of the studies whether the title matches the theme or not. After screening there were 15 papers whose titles are in accordance with the studies theme. Out of the 15 papers that being screened based on the eligibility according to the inclusion and exclusion criteria, obtained 11 papers which are subsequently reviewed. Of the 11 papers and then out of the 11 papers, an evaluation was conducted and the result were 7 papers were deemed most suitable for the purpose of this study (figure 1).

Total of seven journals reviewed, all of which state that domperidone and metoclopramide as well as antiemetic can also be galactogogue. Three journals explained that the usual dose of domperidone used as galactogogue was 10 mg orally 3 times per day and duration of use between 7 and 28 days postpartum, whereas the dose of metoclopramide was 10 mg orally 3-4 times per day and duration of use 7-14 days in various studies. One journal describes the side effects of using domperidone as galactogogue namely insomnia, anxiety and tachycardia.

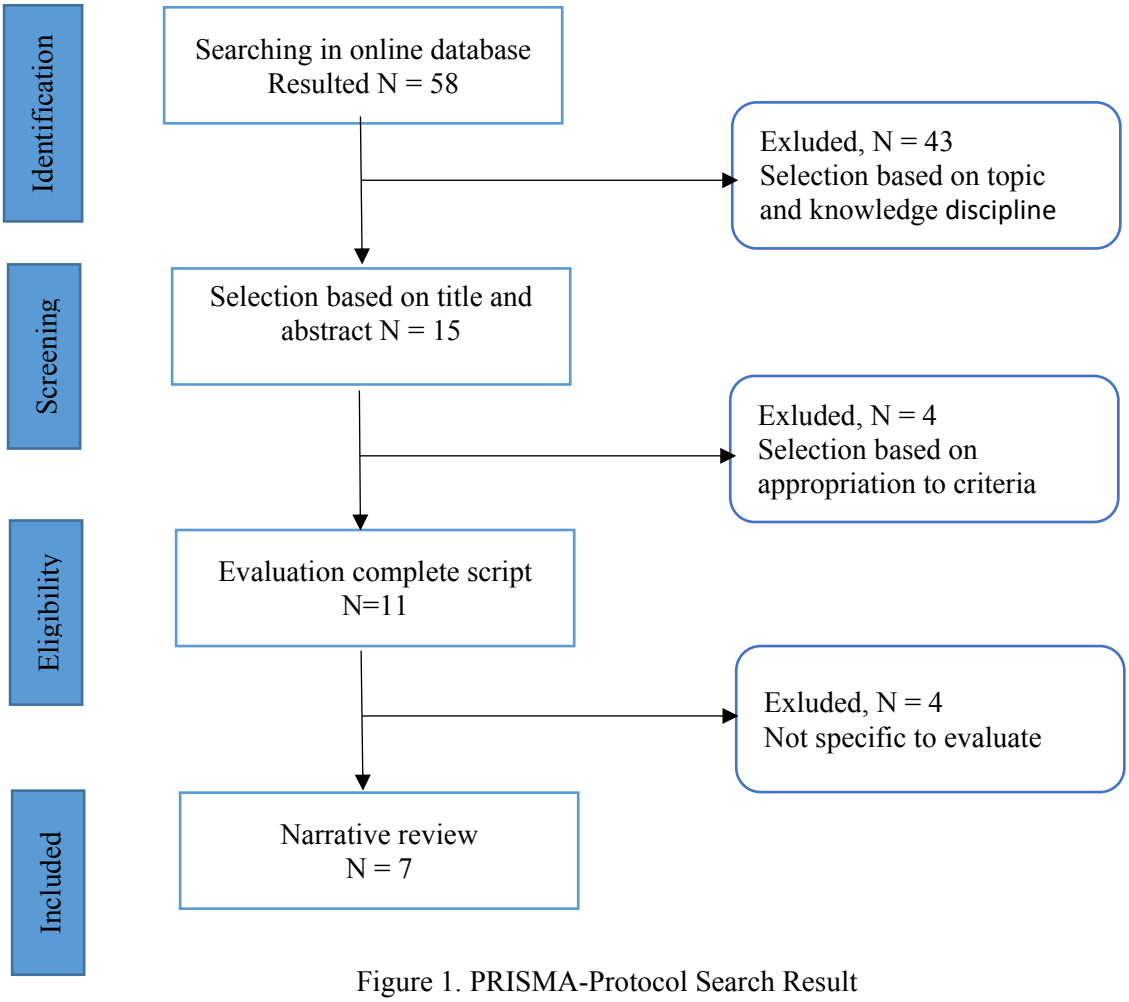

Figure 1. PRISMA-Protocol Search Result

Tabel 1. Critical Appraisal

No	Author	Article Title	Method	Result
1	Wendy Brodribb (2018)	ABM Clinical Protocol #9: Use of Galactogogue in Initiating or Augmenting Maternal Milk Production, Second Revision 2018	RCT	In this journal explained that pharmaceutical galactogogues do increase baseline serum prolactin, and there is evidence for increased milk production with domperidone use (and perhaps metoclopramide). domperidone doses 10 mg orally 3 times per day and duration of use between 7 and 28 days postpartum, may Increased rate of milk secretion in both pump independent mothers of preterm infants and other mothers with low milk supply. Metoclopramide doses 10mg orally 3-4 times per day and duration of use 7-14 day in various studies, possible increase rate of milk secretion.
2	Lisa Helen Amir (2006)	Breastfeeding Managing 'Supply' difficulties	Case study	This journal explained in addition to improving removal of milk from the breast, medication can be used to increase milk supply (galactogogue). Although metoclopramide has been used in the past, domperidone is preferred as it does not cross the blood-brain barrier, less is excreted in breast milk (relative infant dose is 0.042%) and has less risk of side effect than metoclopramide. The usual dosage of domperidone is two 10mg tablets three times per day.
3	John Papastergiou, BSc, BScPhm; Mona Abdallah, BSc, BScPhm; Anthony Tran, BScPhm; Chris Folkins, PhD, BScPhm. (2013)	Domperidone Withdrawal in a Breastfeeding Woman	Randomised Controlled Trial	Studies have shown the efficacy and safety of the off-label use of domperidone as a galactogogue, but there is currently a lack of information regarding : 1) the withdrawal symptoms associated with an abrupt discontinuation of long-term domperidone 2) an optimal tapering regimen to minimize these withdrawal symptoms. Case report demonstrates insomnia, anxiety and tachycardia as examples of potential withdrawal symptoms. In addition, case report supports a 10 mg per week taper as an effective and safe regimen for nursing mothers on long-term domperidone therapy. Nevertheless, further studies on this subject are warranted to provide better evidence for the optimal care of nursing mothers and their newborn infants.
4	Orlando P. da Silva, David C. Knoppert, Michelle M. Angelini, Penelope A. Forret. (2001)	Effect of Domperidone on Milk Production in Mother of Premature Newborn : a Randomized, Double-Blind, Placebo-Controlled Trial.	Randomised Trial	This journal explained that serum prolactin levels were similar in the 2 groups at baseline; by day 5 there were significantly higher in the domperidone group than in the placebo group, returning to baseline levels in both groups 3 day after the last dose of the study medication. Very small amount of domperidone were detected in the breast milk samples.

5	Elizabeth V. Asztalos, Marsha Campbell-Yeo, Orlando P. da Silva, Alex Kiss, David C. Knoppert, Shinya Ito. (2012)	Enhancing Breast Milk Production with Domperidone in Mother of Preterm Neonates (EMPOWER Trial)	Randomised Controlled Trial (EMPOWER)	with the EMPOWER method in this journal the hypothesis is that domperidone, through its pharmacology actions to increase prolactin levels, will help mothers of very premature babies experience shortages ASI production, in increasing breast milk the volume to the level identified is sufficient to continue pump in the period of hospitalization
6	Jennifer Ingram, Hazel Taylor, Cathy Churchill, Alison Pike, Rosemary Greenwood. (2011)	Metoclopramide or Domperidone for Increasing Maternal Breast Milk Output: a Randomised Controlled trial	Double-Blind Randomised controlled trial	This journal explained that mothers produced more milk in the domperidone group and achieved a mean of 96.3% increase in milk volume (mean increase/pretrial volume) compared with a 93.7% increase for metoclopramide. Seven mothers taking metoclopramide reported side effects and three taking domperidone; a further eight women (of 29) who had a follow-on prescription for metoclopramide also reported side effects.
7	Elizabeth V. Asztalos (2018)	Supporting Mothers of Very Preterm Infants and Breast Milk Production: A Review of The Role of Galactogogue		Based on the current literature and recommendations, domperidone, where available, should be the galactogogue of choice, with the dose of 10 mg three time daily for 14 days. There is inadequate evidence to guide treatment beyond 14 days. Careful history-taking and assessment are required to ensure domperidone is not administered to mothers at risk of cardiac arrhythmia. Mothers need to maintain pumping to facilitate the autocrine regulatory mechanism. Mothers should be assessed after 48–72 h of initiating domperidone to determine a response as evidence by an increase in breast milk volume.

DISCUSSION

Breast milk is the best food a newborn needs. Various attempts to increase Mother's milk production between others improvement of the position and attachment of babies with the mother, increase the number / frequency of breastfeeding, increase duration of breastfeeding, giving both breasts every time breastfeeding because the baby can be satisfied with one breast at a time first week of life. Along with its growth, it takes a second breast, and a general assessment of the condition of the mother for example enough protein in food, enough rest and enough milk to drink. In addition to increasing milk production, galactogogue can be used along side with the treatment.

Galactogogue is medicine or other trusted substances can start, maintain, or increase milk production. Indications of giving galactogogue are improving supply of breast milk because the mother or baby is sick or separated. The frequently used galactogogue is metoclopramide and domperidon.

Based on the analysis of the article, it was found that under certain conditions where breastmilk cannot come out or the amount is very small, new mothers can use galactogogue to help them increase the volume of the milk production. Domperidone is an antiemetic which is used off label as a galactogogue because it can stimulate the release of the hormone prolactin from the pituitary gland [4]. Case report side effect such as insomnia, anxiety and tachycardia as examples of potential withdrawal symptoms. In addition, our case report supports a 10 mg per week taper as an effective and safe regimen for nursing mothers on long-term domperidone therapy. Nevertheless, further studies on this subject are warranted to provide better evidence for the optimal care of nursing mothers and their newborn infants [7].

Based on the current literature and recommendations, domperidone, where available, should be the galactogogue of choice, with the dose of 10 mg three time daily for 14 days. There is inadequate evidence to guide treatment beyond 14 days. Careful history-taking and assessment are required to ensure domperidone is not administered to mothers at risk of cardiac arrhythmia. Mothers need to maintain pumping to facilitate the autocrine regulatory mechanism. Mothers should be assessed after 48–72 h of initiating domperidone to determine a response as evidence by an increase in breast milk volume [1].

To anticipate adverse drug reaction, policies need to be made in prescribing domperidone and metoclopramide as galactogogue.

CONCLUSION

Exclusive breastfeeding is the provision of breast milk as early as possible without any additives such as water, tea, oranges, formula milk, honey and without additional solid foods such as bananas, papaya, porridge, milk, biscuits, rice or the team to newborns until the baby is 6 months old. Under certain conditions where breast milk cannot be maximal, galactogogue is needed. Domperidone and metoclopramide, which are known as antiemetic, can be used as a galactogogue. domperidone doses 10 mg orally 3 times per day and duration of use between 7 and 28 days postpartum, may Increased rate of milk secretion in both pump independent mothers of preterm infants and other mothers with low milk supply. Metoclopramide doses 10mg orally 3-4 times per day and duration of use 7-14 day in various studies, possible increase rate of milk secretion. Domperidone does not easily cross the blood brain barrier and tends not to cross into breast milk, thereby reducing the risk of toxicity to the mother and baby. To anticipate adverse drug reaction, policies need to be made in prescribing domperidone and metoclopramide as galactogogue.

REFERENCES

1. Agunbiade, OM and Ogunleye, OV. Constraints to exclusive breastfeeding practice among breastfeeding mothers in Souhwest Nigeria: implications for scaling up. International Breastfeeding Journal. 2012;7(5).
2. UNICEF. The state of the world's children 2017: children in a digital world. New York: United Nations International Children's Fund. 2018
3. Elizabeth V. Asztalos, Marsha Campbell-Yeo, Orlando P. da Silva, Alex Kiss, David C. Knoppert, Shinya Ito. Enhancing Breast Milk Production with Domperidone in Mother of Preterm Neonates (EMPOWER Trial). BMC Pregnancy and Childbirth. 2012.
4. Elizabeth V. Asztalos. Supporting Mothers of Very Preterm Infants and Breast Milk Production: A Review of The Role of Galactogogue. MDPI Journal. 2018.
5. Orlando PS, David CK. Domperidone for Lactating Women: CMAJ CMAJ. Canadian Medical Association Journal; Sep 28, 2004; 171,7; ProQuest pg. 725.
6. Wendy Brodribb. ABM Clinical Protocol #9: Use of Galactogogue in Initiating or Augmenting Maternal Milk Production, Second Revision 2018. Breastfeeding Medicine. 2018.
7. John Papastergiou, BSc, BScPhm; Mona Abdallah, BSc, BScPhm; Anthony Tran, BScPhm; Chris Folkins, PhD, BScPhm. Domperidone Withdrawal in a Breastfeeding Woman. Canadian Pharmacists Journal. 2013.
8. Jennifer Ingram, Hazel Taylor, Cathy Churchill, Alison Pike, Rosemary Greenwood. Metoclopramide or Domperidone for Increasing Maternal Breast Milk Output: a Randomised Controlled trial. BMJ Journal. 2011.
9. Lisa Helen Amir. Breastfeeding Managing 'Supply' difficulties. Australian Family Physician. 2006.
10. Orlando P. da Silva, David C. Knoppert, Michelle M. Angelini, Penelope A. Forret. Effect of Domperidone on Milk Production in Mother of Premature Newborn : a Randomized, Double-Blind, Placebo-Controlled Trial. Canadian Medical Assosiation Journal. 2001.
11. Tengku E. Fazilla, Guslihan D. Tjipta, Emil Azlin, Pertin Sianturi. 'The Effect of Domperidone on Breast Milk Production in Mothers Giving Birth to Premature Babies'. The Journal of Medical School, University of Sumatera Utara. 2013.