
Clinical Research Article

Lactation Induction in a Transgender Woman Wanting to Breastfeed: Case Report

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Abbreviation: RR, reference range.

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Abstract

Context: Breastfeeding is known to have many health and wellness benefits to the mother and infant; however, breastfeeding in trans women has been greatly under-researched.

Objective: To review potential methods of lactation induction in trans women wishing to breastfeed and to review the embryological basis for breastfeeding in trans women.

Design: This article summarizes a case of successful lactation in a trans woman, in which milk production was achieved in just over 1 month.

Setting: This patient was followed in an outpatient endocrinology clinic.

Participant: A single trans woman was followed in our endocrinology clinic for a period of 9 months while she took hormone therapy to help with lactation.

Interventions: Readily available lactation induction protocols for nonpuerperal mothers were reviewed and used to guide hormone therapy selection. Daily dose of progesterone was increased from 100 mg to 200 mg daily. The galactagogue domperidone was started at 10 mg 3 times daily and titrated up to effect. She was encouraged to use an electric pump and to increase her frequency of pumping.

Main Outcome Measure: Lactation induction

Results: At one month, she had noticed a significant increase in her breast size and fullness. Her milk supply had increased rapidly, and she was producing up to 3 to 5 ounces of milk per day with manual expression alone.

Conclusions: We report the second case in the medical literature to demonstrate successful breastfeeding in a trans woman through use of hormonal augmentation.

Key Words: breastfeeding, lactation induction, transgender, trans woman, sex hormones, hormone therapy

Breastfeeding is known to provide several benefits for both infants and their mothers. Health-related benefits include but are not limited to the protection against acute

and chronic illness for both the infant and mother, the development of an emotional bond, and economic benefits (1-3). There have been several case reports in the medical

literature demonstrating the successful induction of lactation in cis women who are mothers of adopted children, partners in same-sex relationships, or biological mothers of a surrogate pregnancy (4). Some of these case reports even demonstrate emotional benefits to the surrogate mother with short-lived breastfeeding, independent of breastmilk production (4). This suggests that breastfeeding is part of the female gender experience and lactation induction should be a worthwhile goal in those who choose it. Contrary to breastfeeding in cis women, research surrounding lactation induction and breastfeeding in transgender people has been limited.

A study published in the American Journal of Public Health estimated the US transgender population size to be 390 adults per 100 000 or 1 million adults nationally (5). Despite the continuous growth of the transgender population, there remain several barriers to quality healthcare for these patients, including stigmatization as well as a lack of provider knowledge and experience in treating this population. The use of language surrounding fertility and breastfeeding remains heterogendered, meaning that people who breastfeed are assumed to be straight and identify as women. This minimizes the experiences of people outside of society's binary classification of gender (6). The use of misgendering language has a negative impact on the mental health, self-esteem, and social identity of those who identify as nonbinary (7). Guidelines on care for the transgender person discuss reproductive health, including fertility preservation and options for family planning; however, breastfeeding is one aspect of the female gender experience that is not addressed (8).

To date, there has only been one case reported in the medical literature discussing successful breast milk induction in a trans woman (9). Here we report a case, which to our knowledge, is the second reported case in the medical literature of successful lactation induction in a trans woman. Our aim is to demonstrate one method to achieve lactation, which can be used by health care practitioners to assist trans women who are hoping to breastfeed. We also aim to expand the medical literature regarding breastfeeding in trans women and how it differs from breastfeeding in cis women, precipitate further research in the transgender population, and to identify an optimal hormonal regimen for such patients.

Materials and Methods

A review of the English literature, using the PubMed, MEDLINE, and EMBASE databases, was completed to identify any relevant study, reports, or cases of breastfeeding in nonpuerperal individuals, from database inception until November 13, 2020. We did not include lactation

in transgender men, animal models, studies that were not published in English language, or gray literature. We started by looking for literature directly related to transgender women breastfeeding. Medical Subject Headings (MeSH) used for the literature search pertaining to breastfeeding included; lactation OR breast feeding OR milk ejection OR breast milk OR human milk OR relactation. The following MeSH terms were used to identify transgender women in the literature; transgender person* OR intersex person* OR gender minority* OR transsexual* OR gender identity. A total of 64 papers were identified. After title and abstract review, a total of 10 papers were identified.

We subsequently searched the literature for papers related to breastfeeding in nonpuerperal individuals, including adopted parents and same-sex partners. We combined our MeSH terms for breastfeeding with; adopt* OR non-puerperal OR wet nurse OR surrogacy. From this search, a total of 904 papers were identified. We combined the results of both searches; removing duplicates and non-English literature (n = 6). Following title and abstract review, an additional 40 papers were added to our review.

Results

Case Description

We present the case of a 38-year-old trans woman (she/her) who was referred to the endocrinology clinic for assistance in lactation induction. Her partner, who had been breastfeeding their 11-month-old child, was returning to work 3 months after the initial consultation. At the time of her partner's return to work, our patient was to become the primary caregiver.

For 4 months prior to her initial visit, she had been using a manual pump 3 to 4 times daily for approximately 5 minutes' duration. She had been able to accumulate a few drops per day using only this method. Her reasons for wanting to breastfeed included the nutritional value of breast milk, to further her breast development, and to strengthen the bond with her child. At that time, her child had already progressed to solid foods and they were supplementing with breast milk. Her partner conceived their child through intrauterine insemination using her preserved sperm, and their child was otherwise healthy and meeting all developmental milestones.

Her past medical history was unremarkable with the exception of gastroesophageal reflux. She had no history of HIV or sexually transmitted infections. She was a nonsmoker with minimal alcohol consumption and she did not use any recreational drugs. She began her transition from male to female in 2012 at which time she was started on spironolactone and estradiol. She had undergone

feminizing facial reconstruction but had not received gender-affirming chest or genital surgery. Earlier in the year, she had been started on progesterone to assist with breast development. Her medications included spironolactone 100 mg twice daily, pantoprazole 40 mg daily, progesterone 100 mg daily and Estrace 5 mg daily. An initial hormone panel showed a serum total testosterone <0.5 nmol/L (reference range (RR), 0.4-2.1 nmol/L), serum progesterone of 13.5 nmol/L (first trimester RR, 10-470 nmol/L), estradiol of 660 pmol/L (RR mid-cycle peak for cis women, 140-2400) prolactin 16 mcg/L (RR, 4-27 mcg/L), and undetectable luteinizing hormone and follicle-stimulating hormone.

Given her breastfeeding success with manual expression alone, we felt that milk production could improve by emulating breastfeeding protocols in place for cis women. With the guidance of lactation induction protocols in nonpuerperal women, we provided our patient with a lactation induction protocol. First, her progesterone dosage was increased to 200 mg daily and she was started on domperidone 10 mg 3 times daily. She was also encouraged to use an electric pump and to increase the frequency of pumping to at least 3 times daily and once during the night, for 5 minutes on each side.

At our 1-month follow-up, she had noticed a significant increase in her breast size and fullness. Her milk supply had increased rapidly, and she was producing up to 3 to 5 ounces of milk per day with manual expression alone, which she used for supplementation. She was using manual expression alone due to nipple irritation from use of the electric pump. After 8 weeks, her milk supply was decreasing, so the domperidone was increased to 30 mg 3 times daily. This was effective at increasing milk supply back to 3 to 5 ounces per day. Although this was not enough to meet the nutritional needs of her child, she felt encouraged that she was potentially contributing to the immunological health of her child.

She was followed up in the clinic after 6 months, at which time her milk supply had decreased to approximately 1 teaspoon in total per day; however, she continued to comfort her son with suckling 2 to 3 times per day and would use hand expression 3 times daily and once overnight. Her blood work at this time showed that her prolactin had increased from 16 mcg/L to 172 mcg/L. Her progesterone and estrogen levels remained steady at 9.6 nmol/L and 605 pmol/L respectively and her follicle-stimulating hormone and luteinizing hormone remained undetectable. Her domperidone was increased from 10 mg to 20 mg, 3 times daily.

At a 9-month follow-up visit, she discussed having discontinued the domperidone at various times over the preceding 6 months. On occasions when she restarted the domperidone, she subjectively noticed a more rapid

increase in her milk supply if she simultaneously decreased or discontinued her estrogen.

Discussion

To our knowledge, this is the second case reported in the medical literature of a transgender woman successfully breastfeeding, and the first in which lactation occurred within 1 month of initiating hormone augmentation. In 2018, Reisman and Goldstein published the first case of a transgender woman successfully breastfeeding with much media attention (9). In their case report, a 30-year-old transgender woman, whose partner was pregnant and did not want to breastfeed, took elevated levels of estrogen and progesterone in combination with domperidone for 3.5 months (9). When the baby was born, she was able to exclusively breastfeed for 6 weeks and then supplemented with formula (9). Since that time, other trans women have come out to share their personal experiences with breastfeeding and lactation, however research in this area remains quite limited (10).

Breast development occurs in 3 major stages—embryonic, pubertal, and reproductive (11). During the embryonic phase, bilateral milk lines develop in the first trimester starting around day 10. These give rise to 2 placodes, which are ectodermal thickenings that will become breast tissue (11). By the end of the embryonic period, the ductal lumens have been formed and the nipples have developed (11). At this stage in mice, mammary gland differences are observed between males and females due to growth of the mesenchyme around the stalk, severing the bud and leading to a diminished ductal system (12). In humans, the bud is not severed during embryogenesis; gland development in males and females is similar until puberty, at which point hormones dictate their size (11). Male breast tissue retains its ability to grow, as evidenced by breast development in trans women who use gender-affirming hormone therapy. Estrogen, in addition to growth hormone through insulin-like growth factor 1 (IGF-1), is critical for pubertal breast development and ductal morphogenesis. However, it is not until pregnancy occurs that the mammary gland truly prepares for lactation. Progesterone and prolactin are the main players in both gland maturation and alveologensis, and it is the alveoli which become the milk-secreting lobules during lactation (11). Since the development of breast tissue is similar between human males and females until the hormonal influences that occur at puberty, it is not unreasonable that under the right hormonal regulation, including the ongoing suppression of androgen, that trans women could lactate.

Among adoptive, same-sex, and biological parents of surrogacy pregnancies, lactation induction has been

of great interest due to the benefits of breastfeeding discussed above. As such, there have been multiple case reports describing successful lactation in women who did not undergo pregnancy (13, 14, 19-22). The ultimate goal is to mimic a normal physiological pregnancy with high levels of estrogen and progesterone that inhibit the effects of prolactin on breast milk production, followed by “delivery” and “removal of the placenta” causing a sudden drop in estrogen and progesterone, which allows prolactin to increase rapidly and initiate milk production. Many of these studies emphasize the importance of advance preparation, commencing induction strategies several weeks before the arrival of the baby. Various methods have been employed to induce lactation including breast stimulation (manually, breast pump, or by nursing), medications to increase prolactin levels (such as the dopamine antagonists metoclopramide, domperidone), and the use of synthetic hormones to stimulate an artificial pregnancy and delivery (21). A referral to a lactation consultant or breastfeeding counselor to assist with latch techniques could also be beneficial in maximizing breast stimulation (21). Although there have been many successes in lactation induction in nonpuerperal parents, most require some degree of supplementation in order to provide adequate nutrition to the infant, especially early on while milk production is being established (14).

For our patient, we started by assessing her baseline hormonal profile. Her laboratory investigations showed undetectable testosterone levels, high-normal estrogen, and progesterone levels in keeping with the first trimester of pregnancy. This was appropriate for her gender-affirming hormone regimen and is consistent with local guidelines, with the exception of progesterone, the use of which is controversial. To increase the development of the glands and alveoli essential for lactation, we doubled the dose of progesterone to 200 mg daily. Progesterone is recommended to be administered in the evening due to the variable sedative properties of its metabolites (15-17). Ideal dosing to maintain levels in the luteal range or higher are not known, likely owing at least in part to hepatic metabolism, but doses of 300 mg daily have been suggested based on some studies (18). In addition, we initiated the commonly used galactagogue, domperidone 10 mg 3 times daily, to increase levels of prolactin.

Less than 0.1% of the maternal weight-adjusted dose of domperidone is excreted in breast milk, and there have been no reports of side effects in breastfed infants (23). Domperidone has therefore been approved by the American Academy of Pediatrics and Health Canada for use in breastfeeding mothers (23, 24). Caution should be exercised when prescribing domperidone due to its known effect of QTc prolongation, and greater caution is

necessary for those who also use other medications with known QTc prolongation effects such as antidepressants or antipsychotics. There has also been some theorized risk of QTc prolongation in trans women related to hormone therapy and the suppression of testosterone (25); however, this effect may be mitigated by the concurrent use of progesterone in trans women (25, 26). Carnethon et al (2003) demonstrated a statistically significant risk of QTc prolongation with use of estrogen-alone hormonal therapy, but not with progesterone plus estrogen hormonal therapy (26).

As opposed to cis women, the induction of lactation in trans women may also require ongoing androgen suppression, and this was achieved with use of spironolactone 100 mg twice daily in our patient. Spironolactone crosses the placenta and is not generally recommended in pregnancy. Spironolactone 1 be used in breastfeeding, although most studies have looked at much lower doses. There has been one human case report describing the development of ambiguous genitalia in a newborn whose mother was treated with spironolactone until week 5 of gestation (27) but similar findings have not been seen in breastfeeding. Despite this, it is important to counsel patients regarding the potential impact on sexual differentiation of a newborn with the use of antiandrogen therapy given the lack of evidence available, while balancing its role in minimizing gender dysphoria in the breastfeeding trans woman.

We advised our patient to maintain adequate hydration and avoid caffeinated beverages which may increase the fluid excretion. In some case reports of lactation induction, there is a suggestion that nipple stimulation and suction through breast pump usage is more important to lactation induction than basal prolactin levels (4). Therefore, our patient was advised to pump every 3 hours, preferably with an electric pump, and once nightly. Due to personal preference, our patient pumped only 3 times per day and once at night, and she used manual expression only due to nipple irritation with the electric pump. However, she was still able to produce 3 to 5 ounces of milk per day.

Some protocols recommend mimicking child delivery by sudden cessation of the estrogen and progesterone which may be a component of the initiation of breastfeeding. In our patient's case, breastmilk production was adequate for her goals. The dosage of estrogen was also not stopped abruptly due to patient preference, as it was a key component of her gender-affirming hormone therapy; however, she did tell us in retrospect that she had tried to decrease her estrogen dose abruptly when she was trying to promote further milk production. She felt that the sudden decrease in dose augmented her milk supply compared to the continuation of her previous dose. Her progesterone was reduced to her basal dose of 100 mg once daily as there had

been no appreciable difference with the initial increase in dose on serum levels, and she had an acceptable response at that time. Rectal administration and increased dosing was discussed.

Although there have now been 2 formally documented cases of successful breastfeeding in trans women, there is an ongoing barrier to exclusive breastfeeding in trans women which is the relatively low milk supply. This was seen in both our case and the one presented by Reisman and Goldstein (9). The volume of breast milk produced by both of the trans women in these case studies would not sustain a growing infant without supplementation. Supply deficiencies may be due to the lack of hormonal regimen guidelines for trans women, or fewer ducts and alveoli in trans women compared with cis women. It is known that oral progesterone is not well absorbed and is extensively metabolized by the liver. Therefore, other methods of progesterone delivery that bypass the liver may be superior for breast maturation and lactation induction. Regardless of the outcomes pertaining to the volume of milk production, this case was successful in that our patient was able to have an experience that was formerly only available to cis women. We should therefore rethink what successful breastfeeding means. The main goal of lactation induction in transgender women may not necessarily be milk production, but rather the nonnutritional benefits that come from breastfeeding.

Transgender persons commonly face significant barriers to accessing healthcare services. The use of heteronormative and cisnormative language in breastfeeding literature and language further reduces the ability of transgender persons, particularly trans women from accessing support leading to marginalization and social exclusion (28). Future research will be important to further characterize such barriers and to determine an optimal hormonal regimen for lactogenesis in trans women. Furthermore, breastfeeding plays a unique role in the female gender experience. Data assessing breastfeeding and lactation, as it relates to female gender identity is scarce, and therefore further research is required to determine the role of breastfeeding in the development of female gender dysphoria. We recommend that breast development with chest circumference should be measured in future studies in this area. Efforts should also be made analyze the protein, nutritional, and immunological components of the breast milk produced by transgender women, which we have not done in this case report. A pilot study was published looking at the protein composition of induced nonpuerperal human milk in 2 nonpuerperal women compared with mature milk at 11 months postpartum. This study showed similar levels of total protein, secretory IgA, lactoferrin, and lysozymes in a very small sample size (29).

Similar research should be completed to assess the relative composition of expressed milk from trans women. It would also be valuable to measure the relative levels of hormones in the breast milk, as this may impact the growth and development of the infant. In summary, lactation induction is likely beneficial for gender identity, irrespective of milk production outcomes. There is enormous potential for ongoing research in this area.

Conclusion

In conclusion, we report the second case in the medical literature demonstrating successful breastfeeding in a trans woman through use of hormonal augmentation. We explored the embryologic basis of breast development and lactogenesis to further understand why it is plausible that trans women could breastfeed with appropriate hormonal augmentation and androgen suppression. The medical literature presents several cases of lactation induction in cis women but is still limited in the transgender population. There are many unanswered questions. Physiologically, hyperprolactinemia and secondary hypogonadism may preclude the need for an antiandrogen. If progesterone and estrogen are required, the optimal dose, route of administration, and the effect of mimicking parturition is unknown. Lastly, it is unknown whether an accelerated protocol could be equivalent to a longer protocol, given differences in breast development in trans women. Breastfeeding is an important aspect of parenting, which is not often discussed in the care of trans women. In this case, despite being unable to adhere to the initial protocol planned, and despite having a relatively rapid timeframe within to make changes and suggestions, breastfeeding was established at a level satisfactory to the patient. It is our hope that further research into this area will improve access to this aspect of female gender identity.

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Additional Information

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Data Availability: Data sharing is not applicable to this article as no datasets were generated or analyzed during the current study.

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