Case reports

Ultrasound as a treatment of mammary blocked duct among 25 postpartum lactating women: a retrospective case series

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Abstract

Objective: The purpose of this case series is to report the outcomes of 25 postpartum women who were experiencing difficulties with breastfeeding and were treated using therapeutic ultrasound.

Methods: Case files of postpartum women who presented to a chiropractic clinic between 2005 and 2011 with difficulties with breastfeeding due to blocked ducts were identified.

Results: Twenty-five cases were retrospectively identified of women who presented with a breast lump that was consistent with a blocked duct. Eight women experienced recurrent blocked ducts (5 had multiple episodes while nursing the same child; 3 women experienced episodes with more than 1 child). Patients had been treated with therapeutic ultrasound, receiving between 1 and 7 treatments (average, 3.3) to experience improvement in their presenting symptoms. A majority of the patients reported improvements in breastfeeding and symptoms after treatment. No adverse reactions were identified in the patient records.

Conclusion: For women reported in this case series, chiropractic management including ultrasound therapy was a beneficial treatment for women presenting with blocked ducts and difficulties breastfeeding.

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Introduction

Unique among all mammals that breastfeed, only humans have a high failure rate of breastfeeding

success, with somewhere between 12.8% and 44% of infants experiencing suboptimal breastfeeding.¹ This is consequence to infant health care because the World Health Organization has asserted that babies around the world be exclusively breastfed for at least the first 6 months of their lives in order “to achieve optimal growth, development and health.”² Exclusive breastfeeding for the infant’s first 6 months of life has been

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championed not only by the World Health Organization³ but also by the American Academy of Pediatrics,⁴ the Canadian Pediatric Society,⁵ and the Healthy People 2010 initiative.⁶ Studies have reported that breastfed children are less likely to have sudden infant death syndrome^{7,8} or develop otitis media¹ or asthma and other respiratory tract infections requiring hospitalizations.⁹ Long-term breastfeeding has been associated with decreased infections; enhanced cognitive development; as well as prevention of obesity, hypertension, and insulin-dependent diabetes among adults.¹⁰⁻¹³ Breastfeeding has benefits to the mother as well, including strengthening the maternal bond, accelerated postpartum weight loss, reduced risk of breast cancer, and continued cessation of menstruation.¹³ However, many women develop problems that make breastfeeding painful, difficult, or even impossible.¹³

Breast engorgement is a normal biological process that typically occurs within the first 3 to 5 days postpartum. Breast engorgement may result in the breasts becoming swollen, hard, throbbing, aching, tender, and painful.¹³ However, severe (or pathological) breast engorgement may also be a consequence of mismanagement of the lactation process and may result from processes that allow milk stasis to occur.^{13,14} It has been estimated that two-thirds of breastfeeding women experience blocked ducts.¹⁴ Blocked ducts can be defined as when “the breast has an area of localized milk stasis.”¹⁵ At times, this can result in noninfectious mastitis, an inflammation of the breast that may be due to blocked ducts. Mothers can also experience blocked ducts without severe breast engorgement or mastitis.¹³

Blocked ducts are associated with breast engorgement and may result in a localized tender breast lump or area of blushed color; the breast may feel hot; and there may be a white, painful bleb on the end of the nipple.^{13,14} There is generally a lack of constitutional symptoms, although a low-grade fever is not uncommon in cases that are not diagnosed as mastitis.¹³ These complications may result in making lactation painful and difficult, thus endangering the proper nutrition of the baby.¹³ This can also cause anxiety and frustration to both the mother and child; and the woman may choose to discontinue breastfeeding, which typically exacerbates the problem.¹³ There are a myriad of causes of blocked ducts, including insufficient emptying of the breast; not positioning the nursing baby properly on the breast; waiting too long between feedings; supplementing nursing with bottle-feeding; use of a pacifier; certain infant behaviors while breastfeeding (tugging, pulling, or twisting of the nipple by the infant); carrying heavy front-holding

infant carriers, heavy purses, or diaper bags; and or wearing bras that are too tight.^{13,14}

Conventional therapies used to manage difficult breastfeeding include watchful waiting (because blocked ducts often resolve with 24 hours), application of heat or cold, acupuncture, application of cabbage leaves, self-massage, use of various nutriceuticals or pharmaceuticals, and use of therapeutic ultrasound.^{13,16} With respect to the use of nutriceuticals, because it is believed that the milk secretions that remain in the breast because of blocked ducts have a very high fatty composition and thus a higher rate of fluid absorption, it has been posited that lecithin, a phospholipid emulsifier, can be used to emulsify this secretion and subsequently augment breast emptying.¹⁷⁻¹⁹ Lecithin is therefore commonly prescribed to women experiencing blocked ducts.¹⁹

There have been few reports of management of breastfeeding issues with infants in the chiropractic literature.^{1,20} However, no articles have discussed chiropractic care of breastfeeding issues associated with the mother specific to blocked ducts. Therefore, the purpose of this retrospective case series is to report the response of 25 lactating women diagnosed with blocked ducts who were treated by a doctor of chiropractic using therapeutic ultrasound.

Case methods

This retrospective case series was conducted in a private chiropractic clinic in Kirkland, Quebec, Canada. The treating practitioner is a licensed doctor of chiropractic who teaches at the Université du Québec à Trois-Rivières in the chiropractic program on the topic of lactation and completed the International Board Certified Lactation Consultant examination with the International Board of Lactation Consultant Examiner. This study was approved by the Research Ethics Board of the Canadian Memorial Chiropractic College.

Twenty-five case files of patients who were treated by ultrasound were audited from the years 2005 to 2011. Data extraction used a spreadsheet that captured the following data: patient's ethnicity and age, number of previous pregnancies, number of live births, complications during pregnancy, heat application, lecithin supplementation use, pain medication use, massaging of breast while feeding, prior occurrence, number of days of symptoms before onset, symptoms, number of treatments provided, and number of days until improvement of symptoms, along with a commentary of the characteristics of improvement (if any)

each patient realized. Patients were normally instructed to report if they experienced any adverse effects to treatment over the course of care, and the treating chiropractor (VL) asked each patient during subsequent visits if they had experienced any unpleasant reaction to the ultrasound (ie, redness or pain). Thus, this information would have been recorded in the patient medical record.

Selection of patient files was based on the following criteria: patients having specifically consented (in writing) to the use of their clinical information prior to care being administered; comprehensiveness of the file, including follow-up; and that the case involves the use of ultrasound as a treatment of blocked ducts. Files containing all desired extractable data were selected for inclusion in this study, along with those patient files that contained all information of interest. Only patients who were treated with ultrasound were included. Only clinical files meeting these criteria were eligible for inclusion in this case series.

The author (VL) hand-searched all clinical cases involving the use of ultrasound as a treatment of blocked ducts. Twenty-five patient files met the inclusion criteria. However, some women presented with multiple episodes of difficulties with breastfeeding of the same child; and some women experienced difficulties with lactation during the breastfeeding of more than 1 child.

To record these multiple occurrences involving the same woman and same child or episodes involving the same woman but different children, a coding system was developed. In cases where the same woman experiences multiple episodes of difficulties with breastfeeding (patient numbers 1, 5, 20, 21, and 24), each episode was assigned a successive letter (ie, a, b, c); in cases of the same woman experiencing problems with lactation involving a different child (patients 14 and 20), they were assigned a number (ie, "-2"). As an example, patient 20 experienced 2 episodes of difficulties with lactation involving the same child; these episodes were designated as 20a and 20b. However, the same patient experienced difficulties with lactation involving another child; this was designated as "20-2." This meant that 34 separate instances of difficulties with breastfeeding experienced by 25 women involving 27 children were included in this study.

All patients signed a consent form allowing use of the personal health information to be published. Patients who authorized the use of their clinical information for research purposes were guaranteed that all such information will be used anonymously and that their names would not be divulged in any publication.

Description of cases

Patients were treated using the same ultrasound unit (Chattanooga/Interlect/230P; Chattanooga Medical Supply, Chattanooga, TN) using the following intervention settings: 100% (continuous frequency) duty cycle, 1 MHz, 2 W/cm², 8 to 10 min/2× effective radiation area (2-in head size). As normal course of care, patients were asked to report if they experienced any adverse effects during and after the application of ultrasound using these settings.

All but one patient were white, and all but one were older than 30 years (ranging from 29 to 45 years; mean age, 37.8 years) (Table 1). Eleven women had a previous pregnancy and successful birth experience (data of previous pregnancy missing from one file).

Table 1 Demographics and previous history

Patient no.	Age/ethnicity	# of previous pregnancies	# of live births	Complications during pregnancy (if yes, type)
1	36 W	0	1	Breech baby
2	33 W	0	2	Twins
3	35 W	?	1	?
4	? W	0	1	Bleeding during implantation
5	33 W	1	2	0
6	40 W	0	1	0
7	? W	1	2	Hyperemesis gravidarum, preeclampsia
8	34 W	1	2	Preterm labor
9	38 W	0	1	0
10	43 W	0	1	0
11	35 W	0	1	0
12	32 W	1	2	0
13	45 W	0	1	Gestational diabetes
14	34 W	0	1	0
14-2	34 W	1	2	0
15	34 W	0	1	0
16	33 W	1	2	0
17	37 W	1	2	0
18	35 W	1	2	0
19	31 W	1	2	Breech baby but turned
20	31 W	0	1	0
20-2	32 W	1	2	0
21	32 W	0	1	0
22	32 W-A	0	1	0
23	29 W	1	2	0
24	38 W	0	1	0
25	34 W	0	1	0

?, unknown; A, Afro-Canadian; W, white.

Nineteen women did not experience any difficulties during pregnancy; 4 women experienced difficulties including a baby being born in a breech position (2 patients), bleeding early during pregnancy, preeclampsia, and gestational diabetes; and 1 woman gave birth to twins (these data were missing from 1 patient).

Sixteen of the women reported not having a previous history of blocked ducts, whereas 9 women reported a prior history of blocked ducts, ranging from 1 prior occurrence to as many as 7. One woman reported that she experienced symptoms “on and off” for some time, and another woman reported “repeated” (exact number not specified) bouts of symptoms. Two women had been previously diagnosed with mastitis (Tables 2 and 3).

When asked how many days had elapsed between the onset of symptoms and presentation to the doctor of chiropractic, no distinct trends were found. Three cases involved symptoms commencing the same day as presentation, and 7 cases involved symptoms having started the day before; however, 6 women had endured symptoms for more than 20 days, and one of these women had had symptoms for 40 days before presentation (1 data set missing). The mean number of days of symptoms between the onset of symptoms and presentation to the chiropractor among the 34 cases reviewed was 14 days.

Twenty-three of 25 women who experienced a total of 34 episodes of blocked ducts reported a resolution of their symptoms (pain and a breast

Table 2 Symptoms and treatment outcome

Patient no.	Prior occurrence	No. of days of symptoms	Symptoms	No. of treatment	No. of days to improvement
1a	No	2	P, L	1	1
1b	Yes	1	P, L	2	1
1c	Yes	2	P, L	1	1
2	No	1	P, L	1	Same day
3	7×	2	P, L	3	7
4	No	21	P, L	2	3
5a	No	2	P, L	1	Same day
5b	1	1	P, L	2	2
5c	2	1	P, L	1	1
6	No	14	P, L	3	5
7	2 mastitis	4	P, L	2	4
8	Many	Same day	P, L	5	14
9	No	7	P, L	7	23 d
10	2 mastitis	21	P, L	3	2
11	No	1	P, L	2	3
12	Repetitive	1	P, L	2	1
13	No	28	P, L	5	12
14	1	4	P, L	2	5
14-2	No	Same day	P, L	1	1
15	No	2	P, L	6	8
16	On and off	For the last 3 mo	L	5	Referred for investigation
17	On and off	5 took antibiotics	After mastitis had lump	2	3
18	With other baby	7	P, L	2	5
19	No	14	P, L	1	1
20-a	1	2	P, L	2	5
20-b	1	Same day	P, L	2	3
20-2	2	18	P, L	1	1
21-a	No	21	P, L	2	5
21-b	1	2	P, L	1	1
22	No	0	P, L	1	Ended in mastitis
23	No	28	P, L	3	9
24a	No	40	P, L	3	12
24b	1	1	P, L	2	2
25	No	7	P, L	4	15

L, lump; P, pain.

Table 3 Self-care by patients

Patient no.	Heat application	Lecithin supplementation 1200 mg/d 3-4×/d	Pain medication	Massaging the breast while feeding
1a	No	No	Acetaminophen-codeine phosphate	Yes
1b	No	No	Ibuprofen	Yes
1c	Yes	No	Ibuprofen	Yes
2	No	No	No	Yes
3	Yes	Yes	Ibuprofen	Yes
4	Yes	Yes	Ibuprofen	Yes
5a	Yes	No	Ibuprofen	Yes
5b	Yes	No	Ibuprofen	Yes
5c	Yes	No	Ibuprofen	Yes
6	Yes	Yes	No	Yes
7	Yes	No	Acetaminophen	Yes
8	Yes	Yes	No	Yes
9	Yes	No	No	Yes
10	Yes	No	Ibuprofen	Yes
11	No	No	No	No
12	Yes	No	Pseudoephedrine	Yes
13	Yes	Yes	No	Yes
14	Yes	Yes	Ibuprofen	Yes
14-2	Yes	No	Ibuprofen	Yes
15	Yes	Yes	Ibuprofen	Yes
16	No	Yes	No	Yes
17	Yes	No	Acetaminophen	Yes
18	No	Yes	No	Yes
19	Yes	No	Ibuprofen	Yes
20-a	No	No	No	Yes
20-b	Yes	Yes	Ibuprofen	Yes
20-2	Yes	Yes	No	Yes
21-a	Yes	Yes	Naproxen	Yes
21-b	Yes	Yes	No	Yes
22	Yes	No	Yes	Yes
23	Yes	Yes	No	Yes
24-a	Yes	Yes	No	Yes
24-b	No	No	No	Yes
25	Yes	No	Yes	Yes

lump) after treatments of therapeutic ultrasound. Of the 25 cases, all presented with a breast lump (Fig 1) and all but 2 presented with pain, although all the women in this study were able to breastfeed to some extent. Among the 34 instances reviewed, 10 received only 1 treatment and 13 received 2. Overall, patients received anywhere between 1 and 7 treatments (the average number of treatments provided was 3.3). The average number of days that elapsed before the patient experienced improvement was 6.8, although 2 patients experienced resolution of their symptoms the same day and 9 experienced symptom resolution within 1 day. The longest period that elapsed before patients experienced symptom resolution was 15 days, although 1 patient developed mastitis and another patient was referred for further investigation. No adverse effects

were reported by any of the women in this case series over the course of care.

Multiple episodes of blocked ducts

Interesting trends were noted among women who experienced multiple episodes of blocked ducts with the same child (patients 1, 5, 20, 21, and 24). Patient 1 had 3 episodes of blocked ducts involving her child. She reported pain and a lump during all 3 episodes, although she had blocked ducts only during her first episode. Each separate instance of blocked duct required either 1 or 2 treatments; and symptoms resolved in only 1 day in each case, including the resolution of the blocked duct. Patient 5 also had 3 episodes of blocked ducts involving 1 child. Each episode causes pain and a lump. She required 1 or 2

Fig 1. Breast lump due to blocked duct.

treatments only, and symptoms resolved in 2 days or less in each episode.

Patient 20 experienced 2 episodes of blocked ducts with the same child. In each instance, she presented with pain and breast lump. She required 2 treatments for each episode. Symptoms resolved in 5 or 3 days. Patient 21 also experienced 2 episodes of pain and a breast lump. She required 1 or 2 treatments to experience resolution of her symptoms over either 5 or 1 day. She had symptoms for 21 days before presentation during her first episode and required 5 days to experience a resolution of symptoms.

Patient 24 presented with pain and a breast lump during both episodes of blocked ducts. She required either 3 (first episode) or 2 (second episode) treatments to experience a resolution of her symptoms. Although she reported a resolution of her symptoms in only 2 days during her second episode of symptoms, she required 12 days to experience resolution of her symptoms during her first episode.

Three women experienced episodes of blocked ducts involving different children. Patient 14 presented with pain and a breast lump in 2 cases involving 2 different children. The first episode required 2 treatments and took 5 days for her to report a resolution of symptoms. The second episode only required 1 treatment before the patient reported resolution of symptoms the next day.

As described above, patient 20 experienced 3 episodes of blocked ducts with her first child. However, she also experienced an episode of blocked ducts with her second child as well. She had symptoms for 18 days before presentation and reported pain and a breast lump. Her symptoms resolved in 1 day following 1 treatment.

Self-care by patients

In 8 of the 34 cases reviewed, women had applied heat to their breasts to facilitate milk flow. Pain medication was taken in 20 cases, typically over-the-counter pain medications such as acetaminophen or ibuprofen. Fourteen women had supplemented their breastfeeding with lecithin at a dose of 1200 mg/d 3 or 4 times a day (1 woman [patient 14] did not take supplement with lecithin during breastfeeding with her first child but did so with her second). All but 1 of the women had tried breast massage during feeding as a method of cure.

Discussion

A majority of the patients in the case series reported resolution of their symptoms (pain and a breast lump) after treatments of therapeutic ultrasound. Symptom resolution was typically realized within the first week of care; in some cases, the resolution of symptoms was realized the day after the first treatment was rendered. Many of the women included in this case study had tried to self-manage their symptoms using a variety of remedies, some of which have been investigated and reported in the literature. In a review of the literature pertaining to other nonpharmacological treatments for blocked ducts,^{13,14,16,21-23} only 3 relevant articles discussed the chiropractic management of women with either “suboptimal breastfeeding”¹ or “hypolactation.”²³⁻²⁵

Very little has been published about chiropractic management of these conditions. A retrospective consecutive series of 114 infants who were referred to a chiropractor were all assessed for aberrant biomechanical problems and were treated with low-force chiropractic manual therapy (no other treatment details provided) directed at identified areas of tension or pain elicited by practitioner palpation.¹ All but 2 of the infants were diagnosed with “ineffective suck function”; and biomechanical problems identified by the chiropractor included altered tongue function; decreased mandibular excursion or joint laxity; displaced hyoid; aberrant cervical ranges of motion; hypo-

or hypertonic muscles of the face, jaw, and throat; and “mechanical changes in neural function relative to cranial or cervical distortion.”¹ Birth trauma was reported in 14% of these infants, and birth interventions (forceps use, vacuum extraction, or cesarean births) were reported in 41% of them. The infants in this study were treated between 1 and 9 times, and positive outcomes were based on the mother’s rating of improvement. The primary positive outcome for this study was the ability of the infant to be exclusively breastfed (with the maintenance of weight). After chiropractic care, breastfeeding was accomplished in 89 infants (78%); and 23 infants (20%) required some bottle feeding when released from care. Care plans typically involved 2 to 5 treatments over a 2-week period. Two infants were lost to follow-up, and no adverse effects were reported. This case series suffered from several methodological flaws including lack of standardization of treatment provided to infants; all infants were either currently or had previously been under the care of other health care providers; and, although the examination procedure was standardized, it may have been executed differently by the multiple examiners involved in this study. Lastly, the type of care provided was underdescribed; there was a limited follow-up period; and because this was a practice-based case series, there was no “no-treatment” or “sham-treatment” group.¹

Vallone²³ described 3 cases involving chiropractic care provided to women experiencing “hypolactation.” It was her assertion that vertebral subluxation interfered with the transmission of “neural impulses,” resulting in somatic or organic dysfunction. Subluxation of cranial or cervical segments, she opined, interfered with normal neurohormonal regulation, resulting in hypolactation. One infant received Diversified-style high-velocity, low-amplitude spinal manipulations directed to the cervical-occipital region and hard palate (to correct purported subluxation of the sphenobasilar junction), in addition to myofascial release techniques to treat restrictions of the hyoid bone. A second infant received similar spinal manipulations directed to the upper and midcervical, midthoracic, and sacral region; and a third patient received spinal manipulations directed at the upper cervical and midthoracic regions, targeted at dysfunctional joints (chiropractic subluxation) as diagnosed by the author.²³ Women in all 3 cases reported improvements in breastfeeding within a few days postintervention. An article by Tow and Vallone²⁴ discusses the importance of collaboration between a lactation consultant and chiropractic for the optimal management of women experiencing difficulties with breastfeeding.

Another case reported on the management of 2 infants (8 and 4 weeks old) experiencing what the author described as “dysfunctional nursing.” Both children were diagnosed with joint dysfunctions (chiropractic subluxations) of the upper cervical and cranial articulations, and both were treated with cranial-sacral therapy. In addition, both infants were treated using a procedure described as being a “gentle distractive force (traction)”; and one infant also received Diversified-style manipulation.²⁵

Other management of blocked ducts among breastfeeding women

Ayers¹⁶ provided a narrative review of nonmedical or “alternative” treatments for breast engorgement or difficulties with breastfeeding in 2000. According to the author, acupuncture had been associated with positive outcomes, as has breast self-massage, including “nipple preparation,” which involves the nursing mother rolling or rubbing the nipple for 15 or 30 seconds before breastfeeding. This review reported the results of one study that suggested that the application of cabbage leaves was associated with less breast engorgement, although another, better-controlled study reported that the use of creams containing cabbage leaf extract compared with placebo did not result in statistically significant differences between the two among 39 women with breast engorgement.¹⁶ The authors of the latter study suggested that the lack of observed differences between the treatment and placebo groups may be due to the fact that the cream did not contain sufficient amounts of the cabbage leaf extract needed for clinical effect or, perhaps, there was initially insufficient amounts of the extracted ingredient in the cabbage leaves required for reduced breast engorgement.¹⁶ Ayers¹⁶ and her colleagues also opined that the extraction process may have degraded the active (albeit currently unidentified) chemical compound in cabbage leaves required for therapeutic effect.

Mangesi and Dowswell¹³ conducted a systematic review of the literature for the Cochrane Collaboration with respect to treatments for breast engorgement during lactation, the results of which were published in 2010. Mangesi and Dowswell found 8 studies that met the inclusion criteria, although the authors did comment that all 8 studies did suffer from similar methodological flaw, principally a lack of blinding (of woman, staff, and outcome assessors), because many of the outcomes measures were subjective and may have been influenced by knowledge of treatment assignment.¹³

Nevertheless, 8 clinical trials were reviewed: 2 involving the use of acupuncture, 2 involving cabbage leaf therapy, 1 that examined the effect of protease complex, 1 that examined the effect of oxytocin, 1 that examined the use of cold packs, and 1 that examined the use of ultrasound.¹³

The 2 clinical trials involving the use of acupuncture (both by Kvist et al,^{21,22} one published in 2004 and the other in 2007) involved 293 women; and both involved 3 treatment groups: advice and usual care, advice and acupuncture (excluding the SP6 acu-point), and advice and acupuncture including the SP6 acu-point. Unfortunately, neither study provided information of the primary outcome (cessation of breastfeeding and mastitis). Results from one of the studies²² reported that women in the true acupuncture group were less likely to be prescribed antibiotics (which may be a proxy measure of mastitis), although the difference between acupuncture and control group was not statistically significant. Similarly, the women in the acupuncture group were less likely to develop an abscess compared with the women in the control group, although these differences were also not statistically significant. With respect to nonspecific outcomes, women who received acupuncture required less time to resolve their symptoms.¹³

Two studies investigated the use of cabbage leaves for breast engorgement. In both studies, the women's breasts rather than the women themselves were randomized. In one study, during which one breast received cabbage leaves and the other received ice pack therapy, women in both groups reported reduction in pain scores; but there was no statistical difference between the 2 groups. In the other study, during which a women's breast received either chilled or room-temperature cabbage leaves, it was reported that both groups experienced less pain following treatment; but there was no difference between the 2 scores.¹³

One study published in 1965 reported that women who were treated with protease complex (a plant extract) were less likely to have no improvement in pain and less likely to experience no overall change in symptoms or a worsening of symptoms.¹³ An even earlier study (ca 1950) investigated the use of oxytocin compared with placebo. More women in the oxytocin group had no resolution of symptoms compared with control; the difference between groups was not statistically significant. A nonblinded, randomized clinical trial investigated the use of ice packs for women who delivered by cesarian birth and developed symptoms of breast engorgement. Women who applied ice packs reported a reduction of pain intensity;

however, the Cochrane reviewers point out that differences between groups at baseline and the failure to observe randomization by the researchers (women who were in the intervention group but experienced "heightened distress" were moved into the control group) make the results difficult to interpret.¹³

The Cochrane Review discussed the one study published in 1991 by McLachlan et al²³ that investigated the use of active ultrasound vs sham ultrasound in another study where breasts rather than women were randomized (women may have had active treatment in both breasts, or one breast received active treatment and the other did not, or both breasts did not receive active ultrasound treatment at all). When women who had the same treatment (either active or sham) to both breasts were compared, the number of women requiring analgesia was very similar. McLachlan and the other investigators reported that women in both sham and active treatments were associated with reduction in rating of pain, hardness, and swelling of breasts; but there were no statistical differences between the groups at the end of treatment (9 cited in 3). To our knowledge, this is the only published clinical trial investigating the effects of ultrasound on women with breast engorgement.

Limitations

As with retrospective case series, one limitation was selection bias. Improvements experienced by the women in this study may have been coincidental to the care being administered because case reports and case series such as the one presented here cannot by their very nature account for either the natural progression or resolution of symptoms of a disease or condition and they cannot account for the "ebb and flow" of symptoms that present clinically at any given time. As most blocked ducts resolve on their own within 24 to 48 hours,^{13,16} it is possible that the patients would have improved without care. As well, caution should be noted, in that proper diagnosis should be made and clinical training should be obtained before treating breast lumps with therapeutic ultrasound.

Although no causal link can be drawn between the benefits and the treatment rendered because this was only a case series, the majority of women who received therapeutic ultrasound reported improvements in breastfeeding. This information suggests that it may be worthwhile to conduct a clinical trial (preferably randomizing the women and not their symptomatic breasts) to better ascertain the benefits, if any, of therapeutic ultrasound in cases of blocked ducts, either

on their own or subsequent to breast engorgement. Such a study ought to include a “no-treatment” and a “sham-treatment” (ultrasound set to “0”) group. Because ultrasound is within the scope of chiropractic practice, is easy to apply, and has a favorable safety record compared with medication or more invasive forms of treatment, and considering the benefits conveyed to both the mother and child during breastfeeding, such a study would certainly be worthwhile conducting.

Conclusion

This retrospective case series reported on the chiropractic management and use of therapeutic ultrasound to manage ductal blockage that was affecting optimal breastfeeding among 25 lactating women. This case series suggests that therapeutic ultrasound may be a successful strategy for managing blocked ducts.

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