

The effect of breast milk and lanolin on sore nipples

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ABSTRACT

Objective: To compare the effect of rubbing breast milk versus lanolin in the treatment of symptoms of sore nipples.

Methods: We carried out this randomized clinical trial on 225 mothers with sore nipples in the Neonatal Intensive Care Unit of Imam Reza Hospital in Mashhad, Iran from April 2001 for 2 years. We randomly divided the patients into 3 groups. The first group rubbed the hind milk on their nipples at the end of each breast-feeding session, and the second group used lanolin locally on the nipple 3 times a day, and cleaned the nipple with a wet cloth before infant feeding. The third group did not use anything (control group). We corrected the breast-feeding technique of all mothers throughout the study. After the first visit, we reexamined the patient on the third, fifth, seventh and tenth days. We obtained information with interviewing and physical examination by using a questionnaire. We based the sore nipple improvement on absence of irritation according to mothers opinions. We analyzed the obtained information using the SPSS version 11.5 software, and the used tests were Chi-Square test, Mann-Whitney test, and Kruskal-Wallis test.

Results: The first group (breast milk users) included 78 patients, the second group (lanolin users) included 74 patients, and the third group (control group) included 73 patients. The 3 groups were similar in gravidity, delivery method, pre-delivery breast feeding education, the beginning time of the first breast feeding, prior success breast feeding experiences, detergent agents usage for nipples, use of formula, and pacifier. Clinical manifestations, such as appearance time of symptoms, irritation and breast wound were not significantly different. The healing time was different in these 3 groups ($p=0.038$) according to the mean ranking in the groups. The healing time in the lanolin group was longer than the breast milk group ($p=0.029$) and the control group ($p=0.028$). No side effects were noted during the study.

Conclusion: This study suggests that, due to the better healing of the sore nipple with breast milk, its availability, without payment and side effect, breast milk is recommended for the treatment of sore nipples.

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Sore nipples are one of the most common causes of unsuccessfully breast-feeding during the first few days. Any effort for its treatment is a hygienic, therapeutic, and educational criterion of the society. When mother feels irritation in her nipple, it must be examined under adequate light to find erythema or petechia that preclude sore nipples. Any problem in breast-feeding position or weakness in latch-on are the most common etiology of sore nipples.¹

Breast congestion, repeated nipple washing specially with soap, nipple irritation due to creams, and solution usage, and infections are some other causes of sore nipples. There are many treatments with different therapeutic effects for sore nipple such as lanolin, antiseptic sprays, corticosteroids, and hydrogel. Local treatment is not recommended, as it must be washed during breast-feeding and it can itself traumatize the nipple, the local usage of

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breast milk for sore nipple treatment is used in many cultures. We compared the rubbing of breast milk, and lanolin on the treatment of sore nipples in the Neonatal Intensive Care Unit (NICU) of Imam Reza Hospital, Mashhad, Iran.

Methods. We carried out this randomized clinical trial on 225 mothers with sore nipples in the NICU of Imam Reza Hospital in Mashhad, Iran from April 2001 for 2 years. The patients with sore nipples who had fissure around the nipple, or on its surface and who were referred to the ward by specialists were elected. In all patients, the breast-feeding technique was initially corrected if any problems existed; then we randomly divided them into 3 groups (breast milk, lanolin, and control) after acquiring their agreement. We visited them at the third, fifth, seventh and 10th day to monitor the improvement (absence of irritation according to the mothers opinion), and wound healing (wound healing inspection by therapist), and drug side effects were recorded. A questionnaire was prepared that included some information, such as birth weight, number of deliveries, method of delivery, symptom appearance, breast-feeding beginning time, prior success in breast-feeding experience, baby-bottle or pacifier usage, and local agent usage, mother's chief complaint, healing and improvement time. The mother's telephone numbers were recorded, so that if the mother did not attend, she could be contacted. All patients had a direct telephone number for answering of their questions and problems. We recommended the mothers to use acetaminophen if they had a severe intolerable irritation. In the first group (breast milk) at the end of each breast-feeding, the hind milk was rubbed into the nipple, and after drying the breast was dressed. Lanolin users rubbed lanolin into their nipples 3 times a day, and cleaned them with a wet cloth during breast-feeding. The treatment period was 7 days. The control group was just observed, and the breast-feeding techniques were corrected. Babies were fed on demand with exclusive breast-feeding. The examiner was unaware of the treatment method, and the study protocol was approved by the local ethical committee.

We analyzed the data with SPSS version 11.5 software, using Chi-square test, variance analysis, Mann-Whitney test, and Kruskal Wallis test.

Results: A total of 225 patients were randomly divided into 3 groups: breast milk users 78, lanolin users 74, and control group 73 patients. The mean birth weight was 2930 ± 630 grams in breast milk user's group, 3160 ± 470 grams in the lanolin user's group, and 3120 ± 430 grams in the control group ($p=0.083$). The symptoms appearance time was, 4.27 ± 4.6 days in the breast milk group, 3.27 ± 2.1

days in the lanolin group, and 3.83 ± 3.6 days in the control group, with no statistically significant difference ($p=0.23$). There were no significant differences between the 3 groups in relation to gravidity, delivery method, breast-feeding beginning time, and so forth, as shown in **Table 1**. The clinical manifestation, such as symptoms appearance time, irritation, and wound existence were statistically not significant (**Table 2**). According to **Table 3** the improvement time was different between the 3 groups ($p=0.038$), and it was longer in the lanolin group than the other 2. There was no statistically significant difference between the breast milk group, and the control group ($p=0.87$), however, the improvement time in the lanolin group was longer than the breast milk group ($p=0.038$), and the control group ($p=0.023$). The healing time was also different ($p=0.04$), and longer in the lanolin group than the other 2 groups. There was no statistically significant difference between the healing time of the breast milk group and the control group, according to pair-to-pair test (Mann-Whitney test, $p=0.8$), however, the healing time was more in the lanolin group ($p=0.029$), and the control group ($p=0.028$). No side effects were noted during the study.

DISCUSSION. Results show that the healing and improvement times were longer in the lanolin group than the other 2 groups, and there were no statistically significant differences between the breast milk group and control group, however, breast-feeding technique was corrected in all 3 groups. Many studies have been carried out on sore nipples, such as relationship between sore nipple, and staphylococcal infection,² using of baby-bottle and pacifier,^{3,4} local agents and mastitis,⁵ warm water compressing and breast milk evacuation,⁶ and moist environment on the nipple skin,⁷ which showed their different therapeutic effects.

Lanolin is an oily colorless agent, consisting of 2 words: "lana wool" and "oleum oil." Its color is yellowish white, and it is mixed with 25-30% water, and is presented as an ointment. Lanolin has been used due to its emollient property for many years. In the last 2 decades, some allergic effect of lanolin has been shown, and now its hypo allergic type is presented.⁸⁻¹⁰ Dodd¹¹ studied the therapeutic effect of lanolin, comparing it with hydrogel, and found that hydrogel does not have any side effects, and is more effective for decreasing pain, and hydrogel users stopped treatment sooner. Hewat and Ellis¹² studied the therapeutic effect of lanolin, compared with breast milk on sore nipples, and recommended the patients rub lanolin on one nipple, and rub breast milk on the other. There was no significant difference between these 2 methods. Pugh¹³ compared the effectiveness of applying warm

Table 1 - The frequency distribution of the sore nipple risk factors.

Group variable	Breastmilk (N=78) n (%)	Lanolin (N=74) n (%)	Control (N=73) n (%)	P-value
Gravidity				
Unigravida	49 (62.8)	56 (75.7)	43 (58.9)	p=0.08
Multigravida	29 (37.2)	18 (24.3)	30 (41.1)	
Delivery method				
Normal vaginal delivery	26 (33.3)	15 (20.3)	25 (34.2)	p=0.11
Cesarian section	52 (66.7)	59 (79.7)	48 (65.8)	
First Breast feeding time (hour)				
<0.5	4 (5.1)	7 (9.5)	1 (1.4)	p=0.76
0.5-6	65 (83.3)	58 (78.4)	69 (94.5)	
7-12	4 (5.1)	6 (8.1)	2 (2.7)	
>12	5 (6.4)	3 (4.1)	1 (1.4)	
Sucking malposition	76 (97.4)	70 (94.6)	71 (97.3)	p=0.57
Pre-delivery breast feeding education	41 (52.5)	33 (44.6)	34 (46.6)	p=0.51
Prior success breastfeeding experiences in multigravida	29 (100)	16 (88.9)	29 (96.7)	p=0.053
Detergent agents usage	10 (12.8)	8 (10.8)	4 (5.5)	p=0.29
Use of formula and pacifier	28 (35.9)	26 (35.1)	30 (41.1)	p=0.71
Local agents usage	36 (46.2)	44 (59.5)	32 (43.8)	p=0.1

Table 2 - Clinical manifestations of sore nipple.

Variable	Breastmilk	Lanolin	Control	P-value
Symptoms appearance time (day)				
Mean ± SD	4.27 ± 4.6	3.27 ± 2.1	3.83 ± 3.6	p=0.23
Mother's chief complaint				
Irritation (%)	70 (89.7)	65 (87.8)	66 (90.4)	p=0.87
Wound (%)	31 (39.7)	33 (44.6)	24 (32.9)	p=0.32

Table 3 - The response to treatment in mothers with sore nipple.

Variable	Breastmilk (N=78) n (%)	Lanolin (N=74) n (%)	Control (N=73) n (%)	P-value
Improvement time (day)				
1-3	5 (6.4)	4 (5.4)	2 (2.7)	p=0.038
4-5	48 (61.5)	33 (44.6)	51 (69.9)	
6-7	23 (29.5)	34 (45.9)	17 (23.3)	
>7	2 (2.6)	3 (4.1)	3 (4.1)	
Healing time (day)				
1-3	1 (1.3)	0 (0)	0 (0)	p=0.040
4-5	25 (32.05)	13 (17.6)	17 (23.9)	
6-7	27 (34.6)	28 (37.8)	38 (52.1)	
>7	25 (32.05)	33 (44.6)	18 (24.7)	

compresses, dried breast milk, and lanolin in relieving nipple pain. Women who used warm compresses reported the least amount of pain after treatment. Buchko et al¹⁴ compared the application of tea bags, warm water compresses, and breast milk to sore nipples, and instruction on technique only. They found that the group who used warm water compresses had significantly less pain than the other 3 groups. In a study by Brent et al¹⁵ they found that sore nipple prophylaxis is possible by breast-feeding technique correction and if sore nipple occurred, breast shell, and lanolin with corrected breast feeding technique can be used as the first choice of treatment.

This study shows the breast-feeding technique correction is the basis of sore nipple treatment; also that breast milk is more effective for sore nipple treatment, compared to lanolin. This finding is different from the Hewat and Ellis theory,¹² as they used 2 therapeutic methods in one patient, and can add their therapeutic effects together, however in the present study, we used just one method for each patient. In spite of other study results in the treatment of sore nipples, breast milk has the advantage of being convenient, inexpensive, and nonpharmacologic. In addition, there is no requirement for washing or nipple trauma secondary to local usage of breast milk. Therefore, breast milk is a natural agent and biologically suitable for the body with no side effects, it is always available, can be used in all social and economic groups of the society, and must be recommended for the treatment of sore nipples.

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