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Breast Refusal and Maternal and Perinatal Risk Factors in the Newborn Period From a Single Center in Şanlıurfa

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Abstract

The many benefits of breastfeeding for both the mother and infant are well known. Therefore, the conditions that influence breastfeeding are important. Therefore, we investigated the frequency of breast refusal in the newborn period and the associated maternal perinatal risk factors at an Şan Med Hospital in Şanlıurfa. A total of 407 mother-infant pairs fulfilling the study's inclusion criteria were enrolled. The percentage of breast refusal in infants was higher in young maternal and paternal age (<25 years), being the first child, and active or passive smoking exposure of the mother during pregnancy. The percentage of breast rejection was lower when the baby started to be breastfed within the first hour of birth. The percentages of infants experiencing breast rejection were found to be significantly higher in the absence of skin-to-skin contact following delivery and in the presence of prelactal feeding at the first 3 days than in their counterparts. The rate of breast rejection was found to be higher in infants fed with mixed or formula compared with infants fed only breast milk during the last 24 h. Multiple logistic regression analysis determined that the risk of breast rejection was higher in maternal smoking/exposure during pregnancy [adjusted odds ratio (aOR): 3.19, 95% confidence interval (CI): 1.01-10.06] and delayed initiation of breastfeeding after the first hour (aOR: 3.45, 95% CI: 1.09-11.0). Being in a smoke-free environment for pregnant women should be supported by an indoor smoking ban, and early initiation of breastfeeding in the first hour after birth should be encouraged.

Keywords: Breast refusal, breastfeeding, newborn

Introduction

An infant suddenly developing an unwillingness to suckle the breast, turning his or her head away when the breast is presented, crying and screaming at the breast, or giving up the breast after a short duration of feeding is accepted as breast rejection.[1]

The rejection of the breast may arise from either the mother or the infant. Some ailments of the infant, such as thrush, pharyngitis, clavicle fracture or diseases of the mother, the smell of perfume, or lack of knowledge and experience, can cause breast rejection.[1] A mother's breast problems will also negatively affect the success of breastfeeding. Using a

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bottle or pacifier may cause nipple confusion, resulting in breast rejection.[2] Rejection of the breast by infants can negatively affect breastfeeding and hinder many of the benefits of breastfeeding for the mother-infant pair.[3-6] There are limited studies on this topic both in Turkey[7-12] and in the world.[2,13] To increase breastfeeding rates, it is necessary to examine the frequency and related factors of the non-sucking status of babies.

In this study, we aimed to examine the frequency of breast rejection in the first month after birth and the maternal and perinatal risk factors in infants in Şanlıurfa Şan Med Hospital.

Materials and Methods

Infants and their mothers who gave birth in the Şanlurfa Şan Med Hospital between June 2017 and September 2017 and who visited the Pediatric Health and Diseases Outpatient Clinic 7-15 days after birth constituted the study population.

Inclusion criteria: (a) voluntary mothers (b) newborns aged 7-15 days.

Exclusion criteria: (a) infants hospitalized in the first week of life because of any health problems such as respiratory distress syndrome, meconium aspiration syndrome, pneumonia, transient tachypnea of the newborn, neurological diseases, and asphyxia or cleft palate, (b) diseases requiring hospitalization of the mother and/or affecting the continuity of breastfeeding.

A study form was administered face-to-face to all voluntary mothers addressing maternal and paternal age, educational status, health problems during pregnancy, exposure to cigarette smoke, birth order, gestational duration, birth weight, mode of delivery, health problems of the infant, mother-infant skin-to-skin contact in the first hour after delivery, initiation of breastfeeding within the first hour, prelacteal feeding status, feeding type at the visit (exclusive breastfeeding, mixed feeding, and only formula feeding), and breast refusal.

Prelacteal feeding is the administration of any substances other than breast milk to newborn babies during the first 3 days after birth.[1]

There is no standardized definition of breast rejection. In this study, breast rejection was defined as unwillingness of the infant to suckle the breast that lasted longer than 2 days and continued for at least 3 breastfeeding sessions in a day.

Sample Size Determination

Refusal/unwillingness to breastfeed in infants has been reported in several 2-24%.[2,7-13] Therefore, 374 mother-infant pairs are needed for a problem with an effect size of 15% with an alpha of 0.05 and a power of 90% (G*Power 3.1.9.4). The study was planned to reach 448 mother-infant couples, with the expectation that the frequency of non-compliance with the inclusion criteria would be 20%.

Statistical Analysis

Data were analyzed with SPSS v.22 Program and are presented as mean, standard deviation (SD), or percentages.

The percentages of breast rejection according to parent-infant characteristics were analyzed using the chi-square test.

Multiple logistic regression analysis revealed an association between breast refusal and paternal and perinatal characteristics. The characteristics with p-value <0.20 in univariate analysis were taken as covariances. Skin-to-skin contact and early initiation of breastfeeding were highly correlated, and to prevent collinsarity, early initiation of breastfeeding was included in the analysis. “Feeding type of infant during the last 24 h” variable was not included in the model as it would be a result of the breast rejection. The adjusted odds ratio (aOR) and 95% confidence intervals (CI) were calculated by logistic regression analysis. A value of $p<0.05$ was considered significant.

Ethical Approval

The mothers were first informed about the study, and a written consent form was obtained from all participants. The study protocol was approved by Hacettepe University’s Non-Interventional Research Ethics Committee (decision no: GO 17/515-22, date: 13.06.2017).

Results

During the study period, 463 mothers wanted to participate in the study. Of these, 56 were excluded from the study because their babies had health problems. A total of 407 mother-infant pairs fulfilling the study’s inclusion criteria were enrolled.

The mean maternal age was 27.4 (SD: 5.4; range: 16-45) years and the mean paternal age 31.5 (SD: 5.6; range: 20-57) years. The median number of children was 2 (range: 1-9). The mean gestational duration was 38.5 (SD: 1.3; range: 35-41) weeks. The mean birth weight was 3.2 (SD: 0.4; range: 1.9-4.5) kg.

Overall, 42 mothers (10.3%) reported smoking during the pregnancy period. Of them, 36 mothers also had environmental smoke exposure. Environmental smoke exposure without maternal smoking was in 41.0%. While the median exposure number of cigarets per day is 20 (range: 1-50) in mothers with environmental exposure, the median number of smoked cigarets is 5 (range: 1-40) in mothers who smoke. Therefore, both smoke exposure and smoking mothers were grouped according to the presence and absence of exposure.

In the study, breast refusal was 4.9% (n=20) (**Table 1**). The percentages of infants experiencing breast rejection were found to be significantly higher in young maternal and paternal age (<25 years), first child, absence of skin-to-skin contact after delivery, delayed initiation of breastfeeding after the first hour of birth, and presence of prelactal feeding than in their counterparts (**Table 1**). Breast rejection was detected in 7.7% of babies having mothers who had environmental exposure or smoked cigarets whereas it was 2.0% in those who had no exposure to smoke, which was statistically significant (p=0.009). In addition, maternal education level, paternal education level, having health problems in pregnancy, type of birth, gestational duration, birth weight, and

gender were also evaluated. The relationship between these criteria and breast rejection was examined, but it was not statistically significant (**Table 1**).

On admission, 98.3% of the newborns aged 7-15 days were being breastfed, seven infants were not breastfed during the last 24 h. However, only 58.2% of newborns were exclusively breastfed. Mixed or formula-fed infants had 8.8% breast refusal and exclusively breastfed infants 2.1% (p=0.002, **Table 1**).

When maternal age (yr), paternal age (yr), birth order (≥2 vs 1), smoking/smoke exposure during pregnancy (presence vs absence), gestational duration (≥37 vs <37 weeks), delayed initiation of breastfeeding (presence vs absence), and prelacteal feeding (presence vs absence) were taken into analysis, multiple logistic regression analysis showed that the maternal active or passive smoke during pregnancy and delayed initiation of breastfeeding had a higher risk for breast refusal at the newborn period (aOR: 3.19, 95% CI: 1.01-10.06 and aOR: 3.45, 95% CI: 1.09-11.0; respectively, **Table 2**).

Highlights

- The mother's exposure to cigarette smoke during pregnancy should be avoided.
- The baby should be brought to the mother's breast within the first hour after birth.
- To encourage and increase breastfeeding, diverse methods should be tried.

Discussion

In this study, we found that the rate of breast rejection was 4.9% in the first 15 days after childbirth. Yesildal et al.[8], in their survey conducted in Düzce in 2006, reported that 1.9% of 158 infants admitted to the hospital did not breastfeed. Ünalan et al.[9] reported the frequency of unwillingness to breastfeed as 2.0% in 358 infants aged 0-12 months in a primary health care institution in Istanbul in 2006. Yılmazbaş et al.[10] found that 5.4% of 205 babies in Istanbul in 2013

Table 1.
Effects of maternal and infant characteristics on the frequency of breast rejection in healthy infants

		Whole population		Baby experience breast rejection		p
		n	%*	n	%**	
Maternal age	<25 years	125	30.7	11	8.8	**0.023**
	≥25 years	282	69.3	9	3.2	-
Paternal age	<25 years	31	7.6	4	12.9	**0.032**
	≥25 years	376	92.4	16	4.3	-
Maternal education level	≤ Primary school	173	42.5	6	3.5	0.246
	≥ Secondary school	234	57.5	14	6.0	-
Paternal education level	≤ Primary school	84	20.6	4	4.8	0.942
	≥ Secondary school	323	79.4	16	5.0	-
Health problems during pregnancy	Absence	333	81.8	16	4.8	0.829
	Presence	74	18.2	4	5.4	-
Maternal active or passive smoking	Absence	198	48.6	4	2.0	**0.009**
	Presence	209	51.4	16	7.7	-
Birth order	1	148	36.4	13	8.8	**0.006**
	≥2	259	63.6	7	2.7	-
The type of birth	Normal delivery	121	29.7	4	3.3	0.329
	Caesarean delivery	286	70.3	16	5.6	-
Gestational duration	<37 weeks	37	9.1	4	10.8	0.082
	≥37 week	370	90.9	16	4.3	-
Birth weight	<2500 g	22	5.4	0	0.0	0.273
	≥2500 g	385	94.6	20	5.2	-
Gender	Boy	202	49.6	11	5.4	0.622
	Girl	205	50.4	9	4.4	-
Skin-to-skin contact after delivery	Absence	148	36.4	15	10.1	**<0.001**
	Presence	259	63.6	5	1.9	-
Early initiation of breastfeeding within the first hour after birth	Absence	157	38.6	15	9.6	**0.001**
	Presence	250	61.4	5	2.0	-
Prelacteal feed during the first three days	Absence	269	66.1	8	3.0	0.011
	Presence	138	33.9	12	8.7	-
Feeding type during the last 24 h	Exclusive breastfed	237	58.2	5	2.1	0.002
	Mixed or only formula	170	41.8	15	8.8	-
Total		407	100	20	4.9	-

*Percentage of columns, **Row percentage

Table 2.
Factors associated with breast rejection in healthy infants by multiple logistic regression analysis

	aOR	95% CI	p
Maternal age, years	0.98	0.85-1.13	0.819
Paternal age, years	0.94	0.81-1.14	0.419
Birth order, ≥2 vs 1	0.43	0.14-1.27	0.126
Maternal active or passive smoke during pregnancy: presence versus absence	3.19	1.01-10.06	**0.048**
Gestational duration, ≥37 vs <37 week	0.54	0.15-1.88	0.329
Delayed initiation of breastfeeding: presence vs. absence	3.45	1.09-11.0	**0.036**
Prelacteal feeding: presence vs absence	1.51	0.53-4.30	0.438

aOR; Adjusted odds ratio, CI; Confidence interval

stopped breastfeeding in the first 6 months. Çatak et al.[11] reported that 8.7% of 1080 infants aged 0-18 months followed in the 2009-2010 primary healthcare institution in Burdur did not want the breast. However, Çıtak Bilgin et al.[12] found that 23.8% of the mothers who applied to a lactation outpatient clinic experienced a rejection of the breast. In a study by Nayyeri et al.[13] in Iran, the frequency of breast rejection among 6-month-old infants was 24%. Karaçam and Sağlık[7] reported that 24.5% of mothers had breastfeeded problems in a systematic review. The lack of a standard definition for breast rejection in the studies, the difference in the centers studied, and the difference in the infant age ranges make comparison difficult.

We determined that a delay in bringing the infant to the mother's breast after the first hour and exposure to cigaret smoke increased the risk of breast rejection. In previous studies, the negative effects of cigaret smoke and late initiation of breastfeeding on the success and duration of breastfeeding were similarly shown.[2-6] Ekström et al.[14] stated that exposure to cigaret smoke negatively affected the success of breastfeeding and its duration. Demirci and Bogen[15] showed that early breastfeeding after birth increased the success of breastfeeding. It is thought that problems with breastfeeding can be resolved with education programs, raising awareness, and training for parents. Many mothers reported breastfeeding problems related to stop breastfeeding early. These problems can be avoided with appropriate support. In Egypt, 46 infants who were restless at the breast were examined, and it was reported that 13 of them used a pacifier, and half of them had stopped suckling in the follow-up period. Furthermore, five mothers smoked and four infants stopped suckling completely in those cases.[2] In a study by Amaral et al.[16] In a study that included 1377 mothers in Brazil, unexplained breast rejection was observed in 40% of infants with reduced and interrupted breastfeeding.

The exact pathogenesis of breast rejection in infants of smoking mothers who do not use bottles or pacifiers is unknown. Memiş and Yalçın[17] showed that active and passive smoke exposure increased the levels of some mycotoxins in breast milk. In their study, it was observed that nipple problems such as cracking increased significantly in mothers who were exposed to some of these mycotoxins at high levels, and breastfeeding problems were experienced as a result. Further studies are required in this regard.

In our study, we found that breast rejection was more common among infants of parents under the age of 25. Similarly, Scott et al.[18] studied 587 nursing mothers in Roudbari et al.[19] studied 450 nursing mothers in Iran, and both groups concluded that maternal age was positively associated with breastfeeding duration. Ekström et al.[14] showed that high maternal age had a positive effect on breastfeeding duration in their study, which included 488 cases of primiparous (n=194) and multiparous (n=294) mothers in Sweden. In our study, we found higher rates of breast rejection among infants born as the mother's first child. Demirci and Bogen[15] reported similar findings. This is thought to be due to inexperience. Our finding that supports this situation is that in multiple regression analysis, the significance of the effect on breast rejection of the mother being younger than 25 years old and the infant being first in birth order was lost, supporting the previously described results.

In a study by Yngve and Sjöström[20] among mothers in Europe, it was reported that the mother's education and a family structure supporting breastfeeding increased breastfeeding success and reduced the rate of breast rejection. Xiang et al.[21] surveyed 2300 Australian mothers who were working in paid employment in the 13 months before birth by telephone and found that managerial, professional, and self-employed mothers were more likely to breastfeed. Nayyeri et al.[13] obtained the opposite results. They found that working mothers and those with academic careers were more likely to experience a breast rejection. In our study, no relationship was found between the education level of the mother and breast rejection.

In cases of breast rejection, the parents, and especially the mothers, should be encouraged to continue breastfeeding, training should be provided, and opportunities for breastfeeding should be increased, especially for working mothers. Efforts to continue to breastfeed should be pursued for infants who reject the breast, such as using spoons or droppers as necessary and not using bottles. Education should be given to mothers and those who will support them in terms of correct breastfeeding methods. Rates of motherhood at young ages should be reduced, mothers should be given self-confidence, frequent breastfeeding should be recommended, and skin contact should be offered outside breastfeeding times.[1,7,22,23]

Strengths and Limitations of the Study

The main limitation of our study is that it was cross-sectional; therefore, cause-and-effect relationships cannot be established. Our second limitation is that the study was based on mothers' statements. Furthermore, our study evaluated only the first 15 days after birth, and more studies are needed to explore this situation up to the age of 2 years. In our study, only perinatal factors were considered. Because all infants receiving formula used feeding bottles, three-nipple confusion could not be examined in the study.

The major strength of our study is that it is the first comprehensive study on breast rejection in China. However, the results cannot be generalized to the country as they were collected from only one hospital. In this study, the diagnosis of breast rejection was made with the given definition by the same experienced healthcare personnel who received breastfeeding counseling. This definition makes it possible to compare future studies.

Conclusion

In conclusion, to reduce the occurrence of breast rejection by infants, skin contact with the mother's breast should be initiated within 1 h after birth at the latest and smoking should be avoided during pregnancy. Structural, social, and environmental factors that prevent breastfeeding should be investigated and solutions should be produced. The efforts should be made to eliminate factors that cause breast rejection, and deficiencies in current policies on breastfeeding should be identified and addressed.

Ethics Committee Approval: The study protocol was approved by the Hacettepe University Non-Interventional Clinical Research Ethics Committee (decision no: GO 17/515-22, date: 13.06.2017).

Informed Consent: The mothers were first informed about the study and then signed written consent forms.

Author Contributions: Güneş B: Surgical and Medical Practices, Concept, Design, Data Collection or Processing, Analysis or Interpretation, Literature Search, Writing.; Yalçın SS: Surgical and Medical Practices, Concept, Design, Data Collection or Processing, Analysis or Interpretation, Literature Search, Writing.

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