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ORIGINAL ARTICLE

Delayed Onset of Lactation and Accompanying Perinatal Factors in Mothers Who Delivered at the End of A Normal Term Pregnancy

Normal Gebelik Süresinde Doğum Yapan Annelerde Laktasyonun Başlamasında Gecikme ve Eşlik Eden Perinatal Faktörler

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ABSTRACT

Objective: This study aimed to investigate the frequency of delayed onset of lactation and accompanying perinatal factors in mothers who gave birth after a normal gestational course without any health problems.
Methods: The study sample consisted of infants and their mothers who had given birth at Şanlıurfa Şan Med Hospital and then applied to the Pediatrics Health and Diseases Polyclinic for health check-ups within 3-15 days postpartum between June 2017 and September 2017. The data were analyzed with IBM SPSS Statistics 22.0.
Results: 516 mother-infant couples were included in the study. Delayed lactation was reported by 30.6% of mothers, being more common among primiparous mothers and those who delivered by cesarean section ($p<0.001$ and $p=0.044$, respectively). The rate of delayed lactation was lower among those who had skin-to-skin contact than those who did not ($p=0.010$), and among those who started breastfeeding in the first hour than those who did not ($p<0.001$). The rate of delayed lactation was higher if water or food other than breast milk was given on the first day or in the following period ($p<0.001$).
Conclusion: To reduce the risk of delayed lactation, there is a need for more personalized breastfeeding counseling and interventions for mothers who have given birth for the first time. Skin-to-skin contact should be ensured in all deliveries, and unnecessary cesarean deliveries and prelacteal feeding should be avoided.

Keywords: Breastfeeding, cesarean section, delayed lactation, perinatal factors

ÖZ

Amaç: Çalışmamızda normal gebelik haftası sonrası doğum yapan ve sağlık problemi olmayan annelerde laktasyonun başlamasının gecikmesi sıklığı ve eşlik eden perinatal faktörlerin incelenmesi amaçlandı.
Gereç ve Yöntem: Şanlıurfa Özel Şan Med Hastanesinde doğumu gerçekleştirilen ve Haziran 2017 ve Eylül 2017 tarihleri arasında Çocuk Sağlığı ve Hastalıkları polikliniğine sağlık kontrolleri için doğum sonrası 3-15 günler arasında başvuran anne-bebek çifti çalışmanın örneklemini oluşturdu. Veriler IBM-SPSS 22.0 paket programı ile analiz edildi.
Bulgular: Çalışmaya 516 anne-bebek çifti dahil edildi. Annelerin %30,6'sında süt üretiminde gecikme bildirildi. İlk bebeklerde ve sezaryen ile doğanlarda gecikmiş laktasyonun daha fazla olduğu görüldü (sırasıyla; $p<0,001$, $p=0,044$).
Ten-tene temas ($p=0,010$), ilk bir saatte emzirmeye başlamada ($p<0,001$) gecikmiş laktasyon yüzdesinin diğer gruplara göre daha düşük olduğu görüldü. İlk gün içinde ya da takip eden dönemde anne sütü dışında besin/su verilme durumunda gecikmiş laktasyon yüzdesinin daha yüksek olduğu görüldü ($p<0,001$).
Sonuç: Gecikmiş laktasyon riskinin azaltılabilmesi için ilk doğumunu yapan annelere daha yakın emzirme danışmanlığı, tüm doğumlarda ten-tene temasın desteklenmesi ve sezaryan doğum ile prelakteal besin verilme durumlarının önlenmesi girişimlerine ihtiyaç vardır.

Anahtar kelimeler: Emzirme, sezaryen doğum, gecikmiş laktasyon, perinatal faktörler

Introduction

Breastfeeding has many positive effects on the health of both the mother and the baby. However, delayed onset of lactation affects the breastfeeding success of babies and causes them to be fed with formula or a mixture of foods (1). Breastfeeding is common in Turkiye, but the frequency of prelacteal feeding is also high and the rate of exclusive breastfeeding in the first 6 months is inadequate (2). Many factors have been suggested to cause delayed lactation. It has been shown that delivery mode (i.e., vaginal delivery or cesarean section) has an effect on immediate breastfeeding and breastfeeding in the first month. Shorter breastfeeding durations were associated with grandparents residing in the same province, maternal age, illness and employment status, gestational age, and delayed onset of lactation (3-6). In addition, the first 2 hours after birth are very critical for mother-infant bonding. A lack of immediate skin-to-skin contact has been shown to adversely affect mother-infant attachment. This delay also negatively affects breastfeeding (7). To date, however, there has been no study conducted in Şanlıurfa, Turkiye, regarding the frequency of delayed lactation and accompanying factors.

This study aimed to investigate the frequency of delayed onset of lactation and accompanying perinatal factors in mothers who gave birth after a normal gestational course without any health

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problems. If perinatal factors that cause delay in the onset of lactation are detected, preventive measures can be taken accordingly.

Methods

The study sample consisted of infants and their mothers who had given birth at Şanlıurfa Şan Med Hospital and then applied to the Pediatrics Health and Diseases Polyclinic for health check-ups within 3-15 days postpartum between June 2017 and September 2017. Babies with a gestational age of 37 weeks or more who were born from a singleton pregnancy without concomitant anomalies and who did not require hospitalization due to any health problems such as pneumonia were included in the study. The mothers were first informed about the study and then a written consent form was signed. The protocol of the study was approved by the Hacettepe University Non-Interventional Clinical Research Ethics Board (Project Number: GO 17/515). All procedures were carried out in accordance with the relevant ethical guidelines and the principles of the Declaration of Helsinki.

Maternal demographic factors (age, level of education, employment status, number of children), birth-related characteristics (duration of pregnancy, mode of delivery, gender, weight), breastfeeding-related parameters (skin-to-skin contact with the mother immediately after birth, whether the baby was breastfed within the first hour, whether the baby was given anything other than breast milk [was ever given, was given on the first day after birth, or was given in the last 24 hours before presenting to the polyclinic]), and breastfeeding-related problems (cracked nipples, tension, the state of milk production in the first 72 hours) were recorded by administering a questionnaire to the mothers. The birth weight of the baby was recorded as low (below 10% of the standard range), normal (10%-90%), or high (>90%) based on standard weight percentage values according to gestational age (8). Failure to produce milk within the first 72 hours after birth was defined as a delay in the start of milk production, or delayed lactation.

Statistical Analysis

Data were analyzed with IBM SPSS Statistics 22.0. The compliance of continuous variables to normal distribution was examined with the Kolmogrov-Smirnov test. Data were given as means, standard deviations, and percentages as appropriate. Delayed lactation rates in light of other considered variables were examined by chi-square test. Maternal age (years), maternal education (reference:<12 years), maternal employment status (reference: housewife), birth order (reference: first baby), mother's exposure to smokers (reference: no contact), gestational age of the baby (weeks), mode of delivery (reference: vaginal delivery), baby's gender (reference: female), breastfeeding status in the first hour after birth (reference: none), formula feeding status on the first day (reference: none), and the presence of delayed lactation were analyzed by multiple logistic regression analysis with the forward stepwise method. Odds ratios and 95% confidence intervals were given, and significance was accepted at $p<0.05$.

Results

During the study period, 516 mother-infant pairs applied to the polyclinic (Table 1). The mean age of the mothers (±SD) was 27.8±5.6 years (range: 16-45). Only one-tenth of the mothers were employed. The age of the infants was 7.3±2.1 days (range: 3-15) and 37.2% of them were the mother's first baby.

Within the first hour after birth, 58.7% of these babies were brought to the mother's breast (Table 2). On the other hand, 34.3% of the babies were given food other than breast milk on the first day after birth; 168 received formula, 2 received milk/yogurt, 2 received sugared water, and 3 received water. Only 28.3% of the babies were exclusively breastfed from birth through the follow-up period.

A delay in lactation was reported by 30.6% of mothers. Delayed lactation was found more common among primiparous mothers and those who had delivered by cesarean section ($p<0.001$ and $p=0.044$, respectively; Table 1).

Table 1. Admission period mother-infant characteristics and relationships with delayed lactation, n=516

	n (%)*	Delayed lactation (n=158), %**	p
%		30.6	
Maternal age (years)			0.356
<25	149 (28.9)	30.9	
25-34	302 (58.5)	32.1	
≥35	65 (12.6)	23.1	
Maternal education			0.347
<12 years	345 (66.9)	29.3	
≥12 years	171 (33.1)	33.3	
Maternal employment status			0.198
Housewife	461 (89.3)	29.7	
Employed	55 (10.7)	38.2	
Birth order			<0.001
First child (primiparity)	192 (37.2)	42.7[a]	
2-3	230 (44.6)	22.2[b]	
≥4	94 (18.2)	26.6[b]	
Infant's gender			0.507
Male	263 (51.0)	31.9	
Female	253 (49.0)	29.2	
Gestational age			0.421
37-38 weeks (early term)	228 (44.2)	32.5	
39-41 weeks	288 (55.8)	29.2	
Delivery mode			0.044
Vaginal birth	166 (32.2)	24.7	
Cesarean delivery	350 (67.8)	33.4	
Birth weight			0.987
Small by gestational week	40 (7.8)	30.0	
Standard for gestational week	383 (74.2)	30.8	
Large by gestational week	93 (18.0)	30.1	

* Column percentage; ** Row percentage

It was further determined that the rate of delayed lactation was lower among infant-mother pairs with skin-to-skin contact (p=0.010) and those with breastfeeding in the first hour(p<0.001) compared to the other groups (Table 2).

Delayed lactation was more common if water or foods other than breast milk were given to the infant on the first day after birth or in the following period (p<0.001; Table 2).

When the considered maternal and infant factors were examined with multiple logistic regression, the parameters associated with delayed lactation were primiparity (OR: 2.31, 95% CI: 1.57-3.41) and breastfeeding not having been started in the first hour after the infant was born (OR: 1.97, 95% CI: 1.33-2.90).

Table 2. Breastfeeding characteristics and associations with delayed lactation, n=516

	n (%)*	Delayed lactation (n=158), %**	p
Breastfeeding characteristics			
Contact with the mother immediately after birth			0.010
No	205 (39.7)	37.1	
Yes	311 (60.3)	26.4	
Started breastfeeding within the first hour			<0.001
No	213 (41.3)	39.9	
Yes	303 (58.7)	24.1	
On the first day after birth, did the baby receive any food other than breast milk?			<0.001
No	339 (65.7)	25.4	
Yes	177 (34.3)	40.7	
Received formula in the last 24 hours			<0.001
No	309 (59.9)	23.6	
Yes	207(40.1)	41.1	
Did the baby ever receive any formula?			<0.001
No	146 (28.3)	8.9	
Yes	370 (71.7)	39.2	
Cracked nipples			0.554
No	454 (88.0)	30.2	
Yes	62 (12.0)	33.9	
Tightness in the breast			0.062
No	488 (94.6)	29.7	
Yes	28 (5.4)	46.4	

* Column percentage; ** Row percentage

Discussion

It is of significant importance to identify and prevent the causes of delayed lactation. The provision of sufficient breast milk in the first days of life seriously affects the infant's subsequent health. In our study, a delay in milk production was reported by 30.6% of mothers. According to the TNSA-2018 data, the rate of breastfeeding in the first 1 hour in our country is 71%, the delay in lactation is 29%, which is close to the rates of our study group (2). In a study conducted by Yu et al. in China, the rate of delayed lactation among mothers of premature babies was reported as 30% (9). In another study by Dong et al. in China, the rate of delayed lactation among mothers of premature babies was 51.4% (10).

We found that delayed lactation was more common among mothers who had delivered by cesarean section. Stevens et al. reported that cesarean delivery significantly delayed the onset of breastfeeding and increased the likelihood of supplementation (11). In a study in Brazil, Dos Santos Neto et al. found that mothers who had given birth vaginally responded better to the baby's behavior and were more sensitive compared to those who had delivered by cesarean section due to the fact that they had more visual contact with their babies. Mothers were also shown to interact more with their children as they responded more frequently to communicative stimuli. It was concluded that interactions between the mother and child are quantitatively greater and qualitatively better in cases of vaginal delivery compared to intrapartum or elective cesarean section (12). In our study, we found a delay in the onset of lactation among primiparous mothers. Kronborg et al. showed early breastfeeding problems among primiparous mothers due to a lack of practical skills and inexperience in breastfeeding (13). In their study conducted in Aydın, Turkiye, Kılcı et al. examined mothers who gave birth to healthy-term babies at ≥37 weeks, including 327 primiparous mothers with no previous breastfeeding experience. It was shown that breastfeeding success in the early postpartum period reduced breast problems and increased the perception of breastfeeding self-efficacy in the late postpartum period. These researchers emphasized the importance of starting breastfeeding immediately after birth (14). A cross-sectional study by Feenstra et al. in Denmark showed that, among 1437 mothers who gave birth to a single infant at term, early breastfeeding problems were more common for primiparous mothers with low self-efficacy and low self-confidence (15).

In our study, we found that skin-to-skin contact and initiation of breastfeeding within the first hour after birth reduced the risk of delayed lactation. In a study conducted by Huang et al. in China, it was concluded that applying high-quality early basic neonatal care and providing education helped mothers start breastfeeding early, increased the rates of exclusive breastfeeding after discharge from the hospital, increased breastfeeding self-efficacy, and reduced maternal anxiety and pain in the postpartum period (16). In another study conducted Sandhi et al. in Indonesia, it was suggested that skin-to-skin contact and breastfeeding self-efficacy were important determinants of perceived milk supply and that perceptions of higher milk supplies were positively linked to exclusive breastfeeding. These researchers stated that the mother's perceptions of milk supply, breastfeeding self-efficacy, and skin-to-skin contact

could lead to ideal breastfeeding results (17).

We found that the rate of delayed lactation was higher on the first day or in the following period if water or foods other than breast milk were given. Chantry et al. reported that unnecessary in-hospital formula supplementation caused delayed lactation among primiparous mothers. In a study conducted by Khanal et al. in western Nepal, about one-third of babies were given lacteal nutrition instead of breast milk. Delayed lactation and low breastfeeding rates were observed among these babies' mothers. The authors recommended that breastfeeding incentive programs be prioritized for mothers with low-birth-weight infants or high number of births, wealthy families, and cesarean deliveries (18,19).

We did not find a significant relationship between delayed breastfeeding and maternal factors such as age, education status, or employment status. There was also no relationship between the duration of pregnancy, gender, or birth weight (low, standard, or high according to gestational age) and delayed lactation. In addition, there was no relationship between delayed lactation and breastfeeding problems such as cracked nipples or breast tightness. In a study conducted by Gümüşsoy et al., a positive relationship was found between both breastfeeding self-efficacy and the mother's attachment and breastfeeding success in addition to other influencing factors such as the mother's education level, regular health check-ups during pregnancy, the number of applications for health check-ups during pregnancy, breastfeeding of previous babies, having received prenatal breastfeeding training, finding the breast milk supply sufficient, the first food the baby received, when the baby was first breastfed, willingness to breastfeed, fatigue due to breastfeeding, planned breastfeeding period, and the use of additional formula (20). In a study conducted by Pramono et al. in Australia on a baby-friendly hospital initiative, it was stated that the initiative enabled mothers and families to successfully start breastfeeding early, removed obstacles after discharge from the hospital, and made serious contributions to the country's economy via incentives for early breastfeeding (21). The fact that our study was conducted in a baby-friendly hospital and that breastfeeding counseling was given to the mothers may have reduced the effect of mother-infant variables.

Strengths and Limitations of the Study

The main strength of this study is the evaluation of 516 mother-infant pairs in a baby-friendly hospital. The data were used in the development of baby-friendly hospital applications and the supplementary analysis presented here did not yield a cause-and-effect relationship. However, since only term and singleton deliveries were included in this study, our findings cannot be generalized for premature births or multiple pregnancies. As another limitation, maternal stress was not studied. Nagel et al. showed that maternal stress alone reduced the rate and duration of breastfeeding. Maternal stress in the form of anxiety or depression can affect milk production by causing elevated serum cortisol levels and decreased insulin sensitivity (22). Further studies are needed in this regard.

Conclusion

In this study, a delay in the onset of lactation was found in one of every three women who gave birth after a normal term pregnancy. Primiparous pregnancy, cesarean delivery, cases with whom skin-to-skin contact could not be achieved, inability to start breastfeeding within the first hour, and prelacteal nutrition were associated with increased rates of delayed lactation. Timely initiation of lactation and adequate milk production will increase breastfeeding success, as well as increasing the rates of exclusive breastfeeding for the first 6 months. Therefore, in cases with a higher risk of delayed lactation, closer follow-up of the infant-mother pair by lactation consultants is required.

Ethical Declarations

Ethics Committee Approval: The protocol of the study was approved by the Hacettepe University Non-Interventional Clinical Research Ethics Board (Project Number: GO 17/515).

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

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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