Original Article

Analysis of Maternal Characteristics during Breastfeeding in Early Infancy Associated with Prolactin Levels and Breastfeeding LATCH Scores

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Abstract

Objective: This study was carried out in order to analyze maternal characteristics during the breastfeeding in early infancy by use of prolactin comparison and LATCH charting system.
Methods: This is a cross-sectional study involving 63 mothers and their healthy full-term newborns, carried out during 01.04.2010 and 01.05.2010 at the clinic of obstetrics and gynecology in Balcali Medical Faculty Hospital in Adana, Turkey.
The study data were gathered by using questionnaire forms handed out at interviews, and by careful observation throughout the study, which consisted of the pregnancy history of mothers, their knowledge and experiences regarding breast milk, the breastfeeding LATCH score, the prolactin levels in the serums, starting time of breastfeeding, and the Apgar score of newborns for their health assessment. The weight and height of mothers were measured for determining their body-mass index (BMI).
Results: Mothers who started breastfeeding within the first 'thirty minutes' after delivery were found to be 73.0%. Among those who had 'vaginal delivery' this rate is 95.4% in comparison to 61.0% for others who had undergone 'caesarean' procedure. Furthermore the rate of the mothers who had 'general anesthesia' and started breastfeeding within the first thirty minutes is 50.0%, compared to 71.4% of those who had 'regional anesthesia'. The relationship between delivery methods and prolactin levels was found to be significant ($p<0.05$). While the prolactin level of mothers having breastfed their infants in the first 'five minutes' is 380.16+84.77 ng/ml, this is 277.77+115.84 ng/ml for those having done that later than 'thirty minutes' after delivery. The average LATCH score among mothers who had caesarean delivery was 5.56+3.30 while that of those with vaginal delivery was 7.18+3.40.
Conclusion: With respect to supporting breastfeeding in early infancy, vaginal deliveries should be encouraged and regional anesthesia should be recommended instead of caesarean delivery.

Key words: Breast milk, breastfeeding in early infancy, LATCH, prolactin, nursing.

Introduction

There are more than a few factors that inhibit early breastfeeding. One of them is about the condition and attitudes of the mother, which regards to her age, her educational level, her fertility condition. Another contributing factor often neglected is the attitude of nurses, midwives, all of the healthcare personnel. Among undesired activities, that have negative effect on breastfeeding in the early infancy are, such as, the not delivering of the infant to its mother after birth, the parting of the infants of their mothers in separate rooms, the limiting the breastfeeding time due to various personnel activities. Due to the nature of the caesarean operation, elongated hospitalization time and surgery caused stress on the mother, which would, then, adversely affect the mother's breastfeeding (Ozturk & Demir, 2001). Regarding those who anticipate caesarean delivery we recommend counseling sessions about breastfeeding that include both prenatal and postnatal terms.

Following the infant's breastfeeding, the prolactin secretion increases for 10-20 times in

periods of about an hour. The lactation ability of breasts diminishes if the secretion is hindered or breastfeeding is discontinued. For that reason a concerning nurse should support the mother about starting and continuing the breastfeeding program just parallel to the daily care and training requirements (Hennessy, 2003).

Identification instruments can be employed in breastfeeding plans to take objective decisions in the shortest time (Erbil &.Oral, 2005; Sengul et al., 2005).

The reliability of the LATCH breastfeeding charting system has been proved by the Adams and Hewell study. According to a study by Riordan and Koehn, its clinical use was found to be inadequate (Sirin, 1990; TNSA, 2008). However, Okumus and Yenal (2003) reported that the reliability of the LATCH system was found to be adequate for clinical applications. From their point of view, the LATCH charting system is an effective instrument in the postpartum period for the early recognition and treatment of breastfeeding problems (Erbil &.Oral, 2005).

For the purpose of setting up and maintaining a successful breastfeeding, nurses, in the later stages, should actively seek to assume key roles in discovering and overcoming problems - mostly through training and counseling sessions. Thanks to the newborn-friendly nature of the hospital where this study was taken, mothers benefited from training sessions both in prenatal and postnatal terms, and by making it so that they were encouraged to breastfeeding. Variations in breastfeeding style and attitudes are conceivably higher where mothers do not receive such programs at the institutes they give birth (Erbil &.Oral, 2005).

This study was carried out in order to analyze maternal characteristics during the breastfeeding in early infancy by use of prolactin comparison and LATCH charting system.

Methods

This is a cross-sectional study to determine the factors affecting newborn breastfeeding at the early infancy. The study was carried out between 01.04.2010 and 01.05.2010 at the clinic of obstetrics and gynecology in Balcali State Hospital in Adana, Turkey, with the participation of volunteering 63 mothers and their healthy full-term newborns. Also notable, the hospital in which the study took place was known to be "newborn friendly" by the caption.

The mothers' socio-demographic data, the gathered information regarding the deliveries (method, type of anesthesia), the knowledge and experience of the mothers on breastfeeding, the history of pregnancy and the delivery and the neonatal characteristics of the newborn are all among the arguments as independent variables of this study. The first breastfeeding time of the mothers, the effective breastfeeding scores (LATCH scale), the prolactin levels, the mother's willingness to continue breastfeeding are the dependent variables of the study.

The questionnaire, having 49 questions in total and selected through literature, was applied in 30 minutes at a quiet, peaceful place only through interacting with the mother. A part of the questionnaire was answered at the first interview, while the rest was completed by the observation of the researchers during the postpartum period. For compatibility and better comprehension, the questionnaire was firstly applied on a small preliminary group of ten mothers, who were to be excluded from the study afterwards, and then, was applied on the main group having done all necessary amendments.

The first nine questions were targeting socio-demographic characteristics of the family; the following eight were about the history of the pregnancy, the next thirteen were about the knowledge and experience of the mothers regarding breastfeeding, and finally, the last nineteen questions were about the postpartum data, such as the mother's prolactin levels, time of starting breastfeeding, the infant's Apgar score, and the mother's breastfeeding LATCH scores, beside any other relevant data that would indicate the health levels. As one of the standard procedures in obstetric clinics, the prolactin levels were routinely checked as the mothers were allowed into their rooms, essentially, before the breastfeeding.

The Apgar scores were evaluated by neonatologists at the first and fifth minutes during delivery. Data associated with effective breastfeeding were gathered by the researcher using the LATCH charting system. The first breastfeeding time and the duration were recorded by the researcher who was observing the mother's behavior in the room.

In 1986, the LATCH charting system was developed with a similar scale to that of Apgar (Jensen et al, 1994). Within this system there are five criteria whose first letters, therefore, formed the acronym: Latch on breast, Audible swallowing, Type of the nipple, Comfort of breast and nipples, and the Hold position / Help.

Each of these articles is evaluated between 0-2 points, thus, they yield a total score out of 10. The Adams and Hewell study in 1997 (US) has helped the system to gain its worldwide credibility (Yildiz, 2001). Among researchers, the articles have a compatibility ratio of 85-100% each. In Turkey, a study by Okumus and Yenal (2003) suggested that this system would be reliable and appropriate for clinical uses with a Cronbach's alpha value of 0.95 and 90-100% researcher compatibility (Yenal & Okumus, 2003).

The body mass index (BMI) is defined as the individual's body mass divided by the square of his or her height (kg/m^2). To find out the mothers' BMI the instruments used were a platform balance with a horizontal arm that moves vertically on a calibrated scale, and a tape measure.

If the BMI was found to be lower than 19.8 the mother was considered as "underweight", if it was between 19.8 and 26.0 she was deemed "normal", if it was between 26.1 and 29.0 she was considered "overweight", and if the finding was greater than 29 she was said to be "obese" (İrge et al., 2005).

Evaluating these findings the SPSS for Windows (Statistical Package for Social Sciences, v.11.5) was used. Along with more common descriptive methods, chi-square test was employed with ($p<0.05$) in 95% confidence intervals for the analysis of study data.

The research has the ethics committee approval of the Cukurova University (CU) Faculty of Medicine, the verbal consents by the mothers who were adequately briefed before they were asked to join, and the written permits by the department of obstetrics and gynecology in CU Balcalı State Hospital.

Results

Among the 63 participating mothers, 22 were 18-25 years of age (34.9%), 27 were 26-33 years (42.9%), 14 were 34 years or older (22.2%). Regarding literacy, 15 of the mothers were illiterate (23.8%), 24 had finished an elementary school (38.1%), 7 had finished a secondary school (11.1%), 6 had finished a high school (9.5%) and 11 were university graduates (17.5%).

Thirty four of the participating infants were male (54.0%) and 29 were female (46.0%). Concerning their gestation ages, 59 were 38-40 weeks old (93.7%), 4 of them were 41 weeks or older (6.3%). Four Infants were weighing 3.000g (6.3%), 13 were below 3.000g (20.6%) and 46 were heavier than 3.000g (73.0%). Fifty six infants were breastfed right after delivery (88.9%), 7 were fed with formulas (11.1%). The first Apgar scores were ≤ 7 for 26 infants (41.3%), > 7 for 37 infants (58.7%), whereas the second Apgar scores were ≤ 7 for 4 infants (6.3%) and > 7 for 59 infants (93.7%).

Fourty six of the mothers stated that their pregnancy was planned (73%), 17 told theirs was not planned (27%). 32 Of the mothers indicated that they didn't have an illness while they were pregnant (50.8%), 17 stated that they had upper tract respiratory infections (URI) (27.0%), 5 mothers suffered from nausea- vomiting (7.9%) and 9 had blood-pressure related disturbances (14.3%).

Twenty nine of the mothers told that their delivery was timely as expected (46%) and 34 told theirs was not on schedule (54%). As to delivery methods 22 mothers had vaginal delivery (34.9%) and 41 had cesarean section (65.1%). To none of the women who had vaginal delivery any regional anesthesia techniques were applied. On the other hand, general and regional anesthesia techniques (spinal, epidural) were applied on those having cesarean section. Among these surgeries, 20 of them were carried out with general anesthesia (48.8%) and 21 of them had regional anesthesia (51.2%).

Regarding follow-up visits in pregnancy, 13 mothers stated they had 1-5 visits (20.6%), 36 of them stated they had 6-10 visits (57.8%), 11 stated theirs were more than 10 (17.5%) and 3 mothers indicated that they had no visits (4.8%). These follow-up places were state hospitals (13 mothers, 20.6%), private clinics (36 mothers, 57.1%) and university hospitals (11 mothers, 17.5%). 25 Mothers were primaparous and 38 were multiparous (60.3%).

Table 1 - Reviewing the effects of mother and infant delivery characteristics on breastfeeding the newborn in early infancy

**Delivery characteristics		first 5		6th-30 th min		30 min – 1		overall		p
		n	%	n	%	n	%	n	%	
Delivery on expected date?	Yes	8	27.6	12	41.4	9	31.0	29	100.0	P=0.743 X^2= 1.96
	No	6	17.6	20	58.8	8	23.5	34	100.0	
*** Delivery method**	Vaginal	12	54.5	9	40.9	1	4.5	22	100.0	P=0.000 X^2=22.85
	Cesarean	2	4.9	23	56.1	16	39.0	41	100.0	
*** Type of anesthesia**	General anesthesia	0	0.0	10	50.0	0	0.0	20	100.0	P=0.002 X^2=25.29
	Regional anesthesia (spinal, epidural)	2	9.5	13	61.9	6	28.6	21	100.0	
	Vaginal delivery	12	54.5	9	40.9	1	4.5	22	100.0	
*** Has mother developed any impeding**	Yes	1	9.1	3	27.3	7	63.6	11	100.0	P=0.002 X^2=9.12
	No	13	25.0	29	55.8	10	19.2	52	100.0	
*** These impeding conditions are...**	None	13	25.0	29	55.8	10	19.2	52	100.0	P=0.022 X^2=11.99
	Prostration Exhaustion	0	0.0	0	0.0	1	100.	1	100.0	
	Nipple problems	1	10.0	3	30.0	6	60.0	10	100.0	
BMI (kg/m^2)	Normal Overweight Obese	6 8 0	31.6 22.9 0.0	10 16 6	52.6 45.7 66.6	3 11 3	15.8 31.4 33.3	19 35 9	100.0 100.0 100.0	P =0.053 X^2 = 7.75

** Chi-square test was applied * Significant difference found between these delivery characteristics of mother and early breastfeeding ($p<0.05$)

Table 2 – Reviewing the effect of some of the mother's characteristics on the average LATCH score

* Descriptive attributes		LATCH score X±SD	P
Mother's age	18-25 years old 26-33 years old 34 years old and above	6.05±3.6 7.22±2.5 4.14±3.7	P =0.050 x^2=5.97
Educational level	No literacy Elementary school Secondary school High school University graduate	6.33±3.3 3.29±4.2 4.50±3.6 6.90±3.3 7.20±2.3	P =0.154 x^2 =6.67
Number of birth (Parity)	Primaparous Multiparous	6.24±3.7 6.05±3.2	P =0.566 x^2 =0.33
Was this pregnancy planned?	Yes No	5.70±3.7 7.29±2.1	P =0.247 x^2 =11.95
Number of follow-up visits	No visits 1-5 times 6-10 times More than 10 times	5.67±1.1 5.92±3.1 6.53±3.5 5.18±3.8	P =0.483 x^2 =2.46
Expected delivery date?	Yes No	6.31±3.9 5.97±3.0	P =0.380 x^2 =16.99
*** Delivery method**	Vaginal delivery Cesarean section	7.18±3.4 5.56±3.3	P =0.041 x^2 =15.87
Type of anesthesia	General anesthesia Regional anesthesia (spinal, epidural) Vaginal delivery	5.65±3.2 5.48±3.4 7.18±3.4	P =0.123 x^2 =4.18
*** Impeding conditions mother has developed against breastfeeding**	No impeding conditions Prostration, exhaustion Nipple problems	6.71±3.2 3.00±2.1 1.40±1.8	P =0.010 x^2 =11.10
** Chi-square test was applied * Significant difference found between these characteristics of mother and early breastfeeding ($p<0.05$)			

Table 3 – Reviewing the effects of some of the mother's characteristics on prolactin levels

* Descriptive attributes		Prolactin levels	P
Mother's age	18-25 years old 26-33 years old 34 years old and above	328.851±102.221 319.353±97.473 274.494±155.694	P=0.187 x^2 =0.90
BMI	Normal Overwei ght Obese	322.312±100.251 305.321±123.231 312.400±100.254	P =0.950 x^2 =0.42
Number of birth (Parity)	Primaparous Multiparous	326.964±102.773 121.559±324.600	P =0.421 x^2 =0.25
Was this pregnancy planned?	Yes No	316.385±116.926 302.741±109.292	P =0.856 x^2 =0.20
Expected delivery date?	Yes No	301,023±112.552 322.665±116.336	P =0.453 x^2 =0.65
** **Delivery method**	Vaginal delivery Cesarean section	364.256±115.904 285.040±104.487	P =0.009 x^2 =9.39
Type of the anesthesia	Vaginal delivery General anesthesia Regional anesthesia (spinal, epidural)	364.256±115.904 259.438±129.119 309.423±68.683	P=0.108 x^2 =10.02
Impeding conditions mother has developed against breastfeeding	No impeding conditions Prostration, exhaustion Nipple problems	323.386±114.835 234.600±120.114 267.148±123.353	P=0.136 x^2 =3.02
** **Illnesses during the course of pregnancy**	Yes No	299.071±133.586 325.909±91.925	P=0.004 x^2 =0.17
** **And this illness is…**	None URI Nausea - over vomiting HT	325.909±91.925 301.598±135.749 281.868±154.237 289.414±135.566	P=0.001 x^2 =0.40
Willingness to breastfeed?	Yes No	322.066±111.382 282.740±121.859	P=0.244 x^2 =1.18
Mother & child at the same room	Yes No	312.973±119.750 310.542±57.611	P=0.958 x^2 =0.20
First breastfeeding (min)	Within the first 5 minutes Between 6th-30th >30 minutes	380.164±84.770 301.745±115.313 277.772±115.848	P=0.018 x^2 =0.50

** Chi-square test was applied
* Significant difference found between these characteristics of mother and prolactin levels ($p<0.05$)

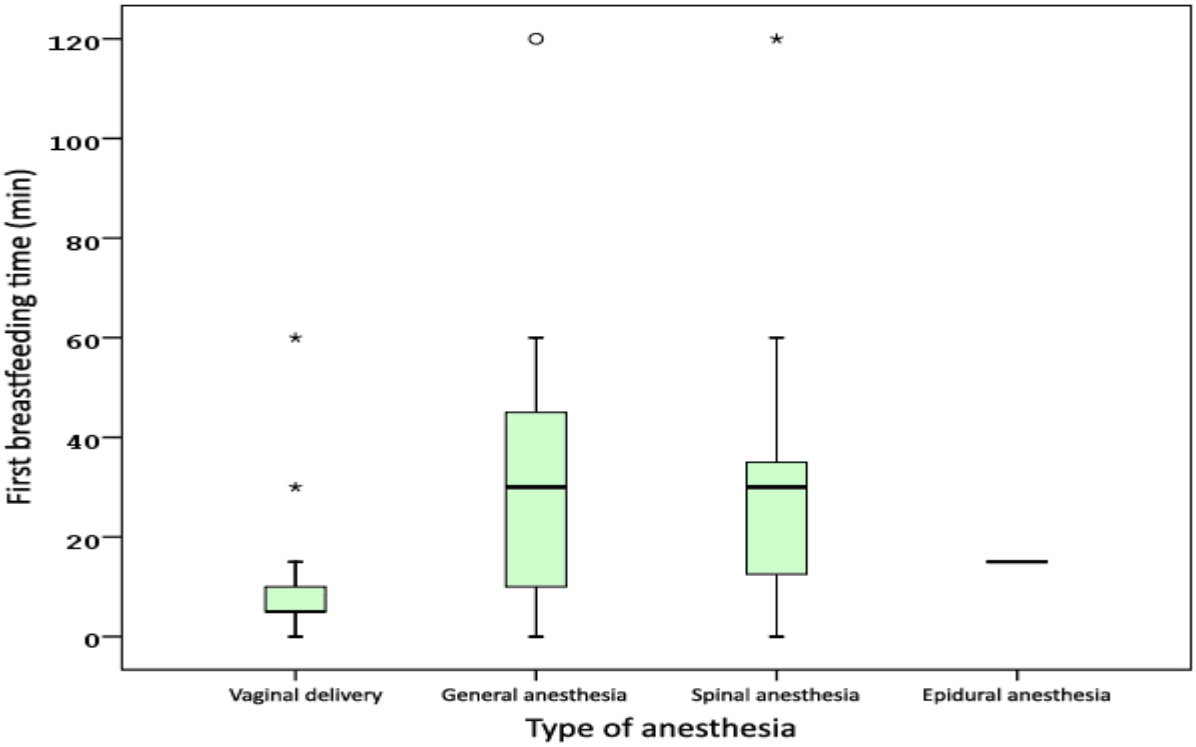

Figure 1. The relation between early breastfeeding and the type of anesthesia

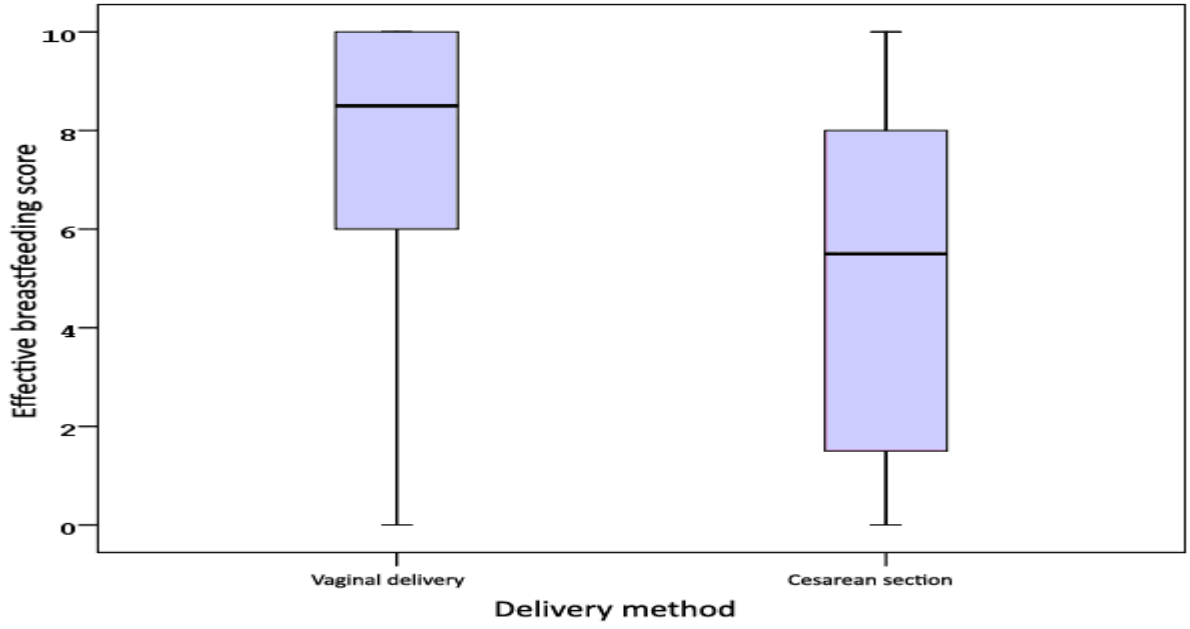

Figure 2. The relation between LATCH scores and the delivery method

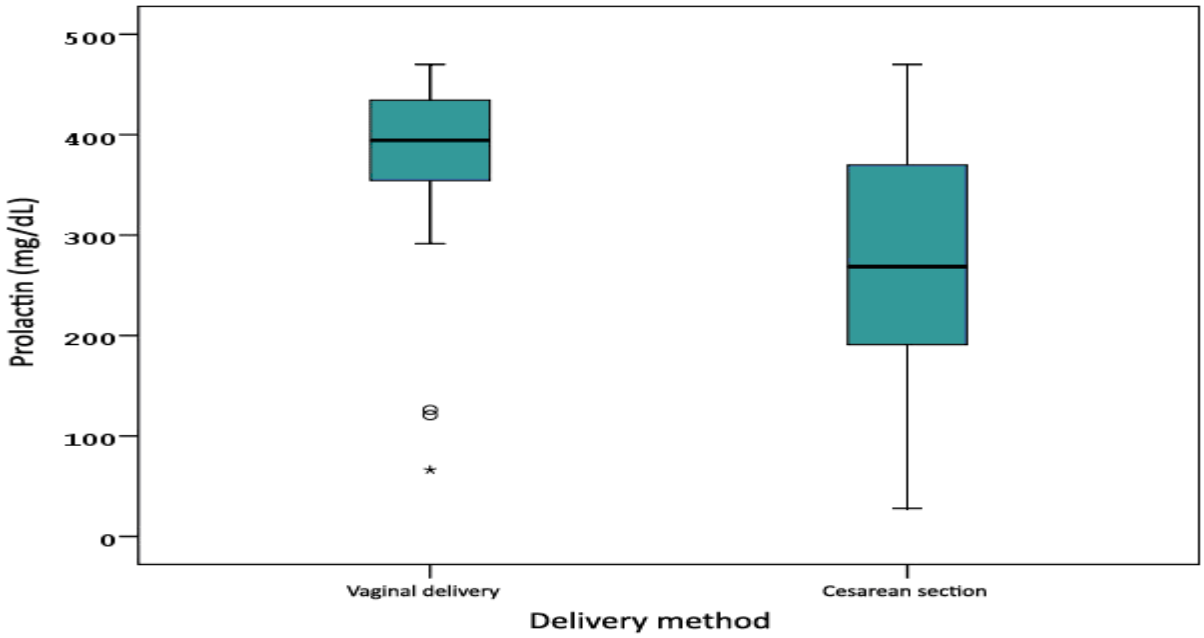

Figure 3. The relation between mother's prolactin levels and delivery methods

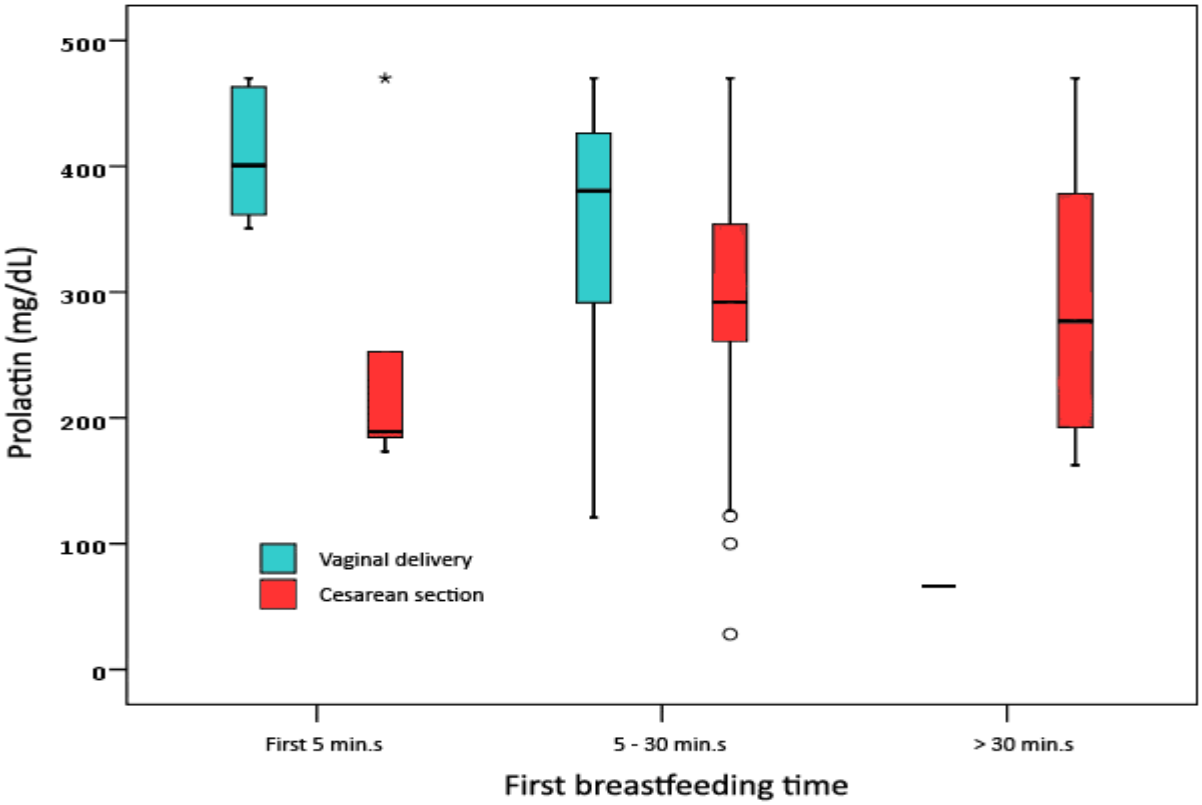

Figure 4. The relation between mother's prolactin levels and the first breastfeeding time

Also shown in table 1, 12 mothers who had vaginal delivery had breastfeeding within the first 5 minutes (54.5%) and 9 of them had this in the 6^{th} - 30^{th} minutes (40.9%). On the other hand, 2 mothers with cesarean section had breastfeeding within the first 5 minutes (4.9%) and 23 of them had this in the 6^{th}- 30^{th} minutes (56.1%). Figure-1 shows that mothers who had undergone general or regional anesthesia (spinal, epidural) during the cesarean section had considerable latency to start breastfeeding compared to others.

The overall average LATCH score was 6.13±3.42 and the average time of starting breastfeeding was found to be 24.48±21.83 minutes.

As seen in figure 2, the LATCH scores among the mothers who had vaginal delivery, interpreted as effective breastfeeding levels, were considerably higher than among those who had undergone cesarean section.

Regarding the infants, the average LATCH scores for males and females were respectively 5.94±3.19 and 6.34±3.17. Moreover, the score was 6.32±3.38 for the 38-40 weeks old infants, and 3.25±2.98 for those older than 41 weeks. Respectively the infant birth weight of 3,000g had a LATCH score of 6.75±2.63, while those below 3,000g had 6.69±3.79, and those above 3,000g had 5.91±3.41. Infants who had the first Apgar score of 7 and above had an average LATCH score of 6.70±3.37, those with the second Apgar score of 7 and below had 6.75±1.50, whereas those with 7 and above in the second Apgar score had 6.49±3.20 respectively.

With regards to the relation between the infant's socio-demographic status and the LATCH breastfeeding score, the difference between the second Apgar score of the infant and the average LATCH score was found to be significant ($p<0.05$). However, there wasn't found any relation between the breastfeeding and none of the following: the infant's gender, gestational age, birth weight and the first Apgar score ($p>0.05$).

Mothers who were briefed about breast milk had an average LATCH score of 6.42±3.6 compared to 5.6±3.1 among those who weren't. The average LATCH score for mothers who used mass media for obtaining this information was 6.50±2.5 and it was perfect to be 10.00±0.0 among those who owed their information to nurses.

The effect of some maternal characteristics on prolactin levels can be viewed in table 3. The relation between the prolactin levels and the mother's age, BMI, the mother's parity, pregnancy plans, expected delivery date wasn't found to be significant ($p>0.05$). Nevertheless, that with the delivery type, illnesses during pregnancy, and the first breastfeeding time was found to be significant ($p<0.05$) (table 3).

As shown in figure 3, the prolactin levels of mothers who had vaginal delivery were higher than those who had cesarean section. In figure 4 it is conceivable to say that the sooner the mother had started breastfeeding the higher the prolactin levels of her would be.

Discussion and Conclusion

At the beginning, 39.7% of the mothers were primaparous and overall 65.1% had vaginal delivery. A 21.7% of those who had undergone the cesarean section, the operations were carried out with general anesthesia. We believe, these birth experiences will have impact on what we will find out.

During the postpartum, newborns should start breastfeeding within 30 minutes after delivery so that their sucking reflexes are stimulated and lactation-involution mechanisms are initiated (Sirin, 1990). The participating mothers in this study had an average starting time of 24.48±21.83 minutes, in which 22.2% of the mothers started in 5 minutes, 50.8% started in 6-30 minutes and 27% breastfed after 30 minutes. According to the 2008 Turkey Demographic and Health Survey (TDHS-2008) the percentage of the infants starting to breastfeed within one hour is 39%, and those within one day is 73.4%. Besides, according to the same survey, 23.2% of the newborns had nutrients other than breast milk before starting with breastfeeding, (TNSA, 2008). In similar studies, Sevinc (2005) found that the percentage of women who had breastfed their newborn right after giving birth -within half an hour- was barely12.6% and among the mothers who had within one hour was 57.6% (Unsal et al., 2005).

In the same year, Unsal et al., (2005) also found that 71.8% of his participants had started breastfeeding within one hour and this behavior had significant impact on exclusively breastfeeding for the first 6 months % (Unsal et

al., 2005). Also related with this, the findings of Cetin et al., in 2005 at a university obstetrics clinic suggests that about half of the participating mothers couldn't have started breastfeeding within the first one hour (Cetin et al, 2005). Keeping in mind that the healthcare personnel and relevant policies have significant effect on breastfeeding, the reason of having higher percentages in this study regarding early-term breastfeeding might be due to the nature of Balcali Medical Faculty Hospital that is classified as newborn friendly.

Among the factors suspected that might have an impact on breastfeeding in early-infancy, a relation between the BMI and the prolactin levels couldn't be determined ($p>0.05$) (Table 3). In 2001, Dewey reported that BMI values greater than 27 kg/m^2 were adversely affecting early-term breastfeeding; among obese mothers lactation was retarded and the prolactin levels were low (Dewey, 2001). Therefore, because obesity affects the starting time of breastfeeding, it is important to brief and support obese mothers in their postpartum period about lactation insufficiency and breastfeeding in early infancy (Eglash et al., 2008). Concordantly, the average prolactin levels in this study were found to be lower among the mothers whose BMI values were high.

In this study, 95.4% of the mothers who had vaginal delivery started breastfeeding within 30 minutes, opposed to 61% of those with cesarean section doing the same (Table 1). Again, Erbil and Oral showed in 2005 that while 41.1% of the mothers who had vaginal delivery started breastfeeding within the first 30 minutes, a majority of those who had cesarean section (62.5%) were able to start breastfeeding after 60 minutes (Erbil & Oral, 2005). Moreover, Tuncel et al., (2006) reported that the rate of breastfeeding within the first hour among those who had spontaneous vaginal delivery was 85.3%, and that on the other hand, this was 63.2% for the other group (Tuncel et al., 2006).

Also shown in Table 1, 50% of the mothers who had general anesthesia started breastfeeding in 30 minutes and for comparison, 71.4% of those who had undergone regional anesthesia did the same. During the spinal and epidural anesthesia applications 20µ g fentanyl and 7.5mg bupivacaine had been used. Beilin et al., (2005) in a rather unrelated study showed that the breastfeeding activity in the test group in which 150µ g fentanyl had been used for epidural anesthesia was found to be significantly lower than among those for whom fentanyl was not used (Beilin et al, 2005).

Another study shows that the narcotic agent buprenorphin, applied on the epidural region during the cesarean section, was found to be adversely affecting the breastfeeding activities, on the other hand, a solo application of anesthetic bupivacaine through postoperative epidural infusion, didn't seem to be affecting (Sınusas & Gagliard, 2001).

Moreover, a study about regional anesthesia suggests that the full breastfeeding activity might be lower in the next few days following the epidural anesthesia and that breastfeeding would be discontinued in 24 weeks (Torvaldsen et al, 2006). Similarly, Baumgarder et al., (2003) also found that the epidural anesthesia applied on delivery had been affecting the breastfeeding in the first 24 hours negatively. In this regard, in the Australian study carried out with 484 participants there was found a relation between epidural anesthesia and short breastfeeding continuity (Torvaldsen et al, 2006). Lastly, in 1988, Lie et al., showed that participants who had epidural anesthesia initiated the breastfeeding earlier than those who had general anesthesia (Lie & Juul, 1988). Concordantly, in this study, the epidural group initiated breastfeeding earlier than those who had general anesthesia, the participants with vaginal delivery, however, were earlier (Table 1).

In order to assess breastfeeding activity the LATCH charting system was employed. While the average LATCH score was found to be 6.13 ± 3.42 in this study, respectively in theirs, Riordan et al., (1998) had an average of 9.0 ± 1.0 and Celebioglu (2005) had 7.2 ± 1.8, (Riordan & Koehn, 1998; Celebioglu et al., 2006). The study findings are important as it points out the significance of introducing the LATCH charting system and that of giving proper service training to nurses. There is a need for classification concerning the LATCH score assessments. Apparently, the LATCH score increases with the rising levels of education of the mother: the university graduates retained LATCH scores almost twice as high as that of the elementary school graduates, nevertheless, the difference was not found to be significant ($p>0.05$) (Table 2).

In the 2005 Celebioglu study there was shown an increase in the LATCH scores with the rising level of the mother's education (Celebioglu et al, 2006). Despite our failure to determine, the mother's educational level might have an impact on breastfeeding.

The participants who had cesarean section, the average LATCH score was 5.56±3.30 (gen. anesthesia: 5.60±3.20 and regional anesthesia: 5.40±3.40),whereas among those who had vaginal delivery it was 7.18±3.40 (table 2). Because the participants had to come after the anesthetic application, they would become physically handicapped, thus, would be in need of practical nursing support. Any pain the mother would suffer might lead to complications regarding breastfeeding position (Sınusas & Gagliard, 2001).

While there were no significant statistical differences found between the average LATCH scores and the gender of the infant, gestation age, birth weight and the first Apgar score, a relation with the second Apgar score was found to be relevant. For infants with 38-40 weeks of gestation age the average LATCH score was 6.32±3.38 and that of the 41 weeks was 3.25±2.98.

Moreover, the infants whose birth weight was 3000g, less than 3000g and more than 3000g had the average scores 6.75±2.63, 6.69±3.79 and 5.91±3.41 respectively. Parallel to our findings, Sevinc (2005) found no statistical relation between the LATCH scores, infant weights nor the gestational ages (Sevinc, 2005).

Even though any straightforward correlation between the mothers' age and the prolactin levels is not found directly in the statistical manner ($p>0.05$), the prolactin levels decline as mothers are getting on in years. The prolactin level for mothers between the ages of 18-25 was 328.85+102.2 ng/ml, whereas it was 274.49+155.6 ng/ml between the ages 34 and over (table 3).

In previous researches, it was stated that mothers with a BMI >30 had difficulties in starting to breastfeed and its sustainability. The presence of mechanical barriers and low levels of prolactin are hypothesized as being the reason why lactation had been affected poorly. Nevertheless, we can conclude that there is not any correlation between the BMI and the prolactin level, since they were found as 322.312± 100.251 ng/ml for a normal BMI and 312.400±100.254 ng/ml for a BMI >30 respectively (Eglash et al., 2008).

According to Dewey (2001), being primaparous of the mother is one of the risk factors for delayed onset of lactation. Different from the 2001 study by Dewey et al.,, it was observed that primaparous mothers had greater prolactin levels. For primaparous mothers, it was 326.964±102.773 ng/ml and for the multiparous mothers it was 121.559±324.600, this is only to indicate that there was not any significant statistical disparity between the number of deliveries and prolactin levels. We can hereby conclude that the difference between the 1998 Dewey study and the 2001 Dewey et al., study was due to lactation in the first 30 minutes. 80% of the primaparous mothers initiated breastfeeding whereas the success rate decreased to 68.4% among multiparous mothers. As the infant sucks its mother, neurons in the nipples are stimulated to send the signal to the hypothalamus for secretion of prolactin which is necessary for the production of the breast milk.

Under the light of what we can deduce here, on the mother's account the following are essential for the sustainability of lactation and secretion reflexes:

(i) initiation of breastfeeding within the first thirty minutes

(ii) frequently breastfeeding up on the infant's will

(iii) mother's confidence on her breast milk

(iv) positive attitudes of the mother

(v) presence of mother and child in the same room (Neyzi et al, 1992; Neyzi & Ertugrul, 1993; Yildiz, 2001; Gokcay & Garibagaoglu, 2002).

In our research, a statistical correlation was found between the delivery types and the prolactin levels. For mothers with vaginal delivery the average prolactin level was 364.256±115.904 ng/ml and for mothers who had cesarean section it was 285.04±104.48 ng/ml. Likewise, another research found that prolactin levels for cesarean and vaginal deliveries were 435.7 ng/ml and 492.7 ng/ml respectively (Gungorduk et al., 2007).

According to these results, one can conclude that mothers giving vaginal birth lactate earlier and secrete prolactin higher than the ones who had cesarean section do (Gungorduk et al., 2007). In literature, there were examples indicating quite

the same results – a significant decrease in prolactin level due to the delivery type – even though one of them had as many as 27 subjects (Heasman et al, 1997).

Nonetheless, according to Dewey et al., (2001) the cesarean section is still considered as one of the factors for the delayed onset of lactation (Dewey, 2001). Even though in previous research any relation between breastfeeding time and prolactin levels was not stated, dissimilarly we did observe a relation (Kafkasli et al., 1996). The experiments were conducted within three separate time frames, the first 5 minutes, 6-30 minutes and above 30 minutes. For each group the prolactin levels respectively were found to be 380.16±84.77 ng/ml, 301.75±115.31 ng/ml and 277.77±115.84 ng/ml, (table 3).

During this study, in which the prolactin levels for participants who had general anesthesia was found to be 259.44±129.12 ng/ml and for the other group (epidural, spinal) 309.42±68.68 ng/ml, there wasn't determined a significant relation between the prolactin levels and the anesthesia type according to our data (table 3).

In a study about regional anesthesia it was indicated that women who had epidural anesthesia might suffer a sudden drop from full breastfeeding activities as enlightened by the following several cases; in addition, they could stop breastfeeding completely in the 24th week (Torvaldsen et al, 2006). In a 2003 study, Baumgarder et al., (2003). stated that the epidural anesthesia adversely affected breastfeeding at the first 24 hours. In another study that assessed breastfeeding habits at the 12th week, it was observed that mothers who belonged to the epidural group had switched to formula feeding because they thought their milk was not sufficient. Besides, this research also highlighted that the complaint "I do not have breast milk" was frequent among the members in that group (Volmanen & Valenne, 2004). However, it is known that epidural anesthesia inhibits the secretion of oxytocin, that is needed for excreting the breast milk (Rahm et al, 2002). Even though the prolactin keeps running the milk production, without oxytocin there will be no breastfeeding (WHO/UNICEF, 1994). Therefore, low levels of breast milk are not about prolactin levels. To this end, decreasing the number of cesarean section operations and avoiding general anesthesia can be recommended. One more time, with all these crucial findings it was underlined that the importance of breast milk emerges as a great concern - for the infants' health.

In our research, there was a significant correlation between illnesses of the mother during pregnancy and the prolactin levels ($p<0.05$). In those who had illnesses during pregnancy the average prolactin level was 299.071±133.586 ng/ml while among then healthy mothers it was 325.909±91.925 ng/ml (table 3). Moreover, there wasn't found any correlation between postnatal impeding conditions and prolactin levels.

Mothers, who were whether willing or not to breastfeed, their presence in the same room was not correlated with the prolactin levels. Among mothers staying in the same room with their newborn infants, the prolactin levels were 312.973±119.750 ng/ml against to 310.542±57.611 ng/ml in the other group. Similarly, mothers willing to breastfeed had prolactin levels of 322.066+111.382 ng/ml whereas the others had 282.740+121.859 ng/ml. Mothers can be tired, exhausted, even they can develop nipple problems; for a nurse, therefore, it is important to encourage, promote and consult such patients.

Relevant studies in Turkey and worldwide support the idea that women who had delivery with cesarean section are prone to delay breastfeeding for the as mentioned reasons, such as the need for resting their body, time it takes to pick up oneself after surgery etc. Eventually they become inclined to initiate food supplements within the six months in the prelactal period. In our country where the rate of cesarean section is already high among women, they should be encouraged and supported with respect to breastfeeding initiation times (Unsal et al, 2005; Tuncel et al, 2006).

In terms of findings, the study has singled out nurses as the outstanding personnel who can likely have the most sensitive role in the initiation and sustaining of breastfeeding through establishing trust and face-to-face interactions with the mother in each of the prenatal, natal, and postpartum periods (Ozturk & Demir, 2001; Tengir & Çetinkaya, 2011). Together with midwives, it is a crucial point that such a responsibility which would last until the infant drops the breast milk, and unarguably the success would be a life-time achievement from the point of position of the mothers, should start as early as the prenatal periods have commenced using the

follow-up sessions, the clinic visits, or the doctor's quarters in the hospitals, or the if available house visits/in-house trainings, so that the candidate mothers will develop this awareness, something they can't make on their own (Hennessy, 2003; WHO/UNICEF, 2004).

Regarding the supporting of breastfeeding in early infancy, vaginal deliveries should be encouraged and regional anesthesia should be recommended only when a caesarean delivery is necessary.

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