

Original Article**Evaluation of Verniks Kazeosa According to the Lund and Browder Burn Table****Sare Cansu Kalkan, MSc****Sakarya University Training and Research Hospital, Sakarya, Turkey****Saadet Yazici, PhD****Professor, University of Health Sciences, Faculty of Health Sciences, Istanbul, Turkey****Correspondence:** Sare Cansu Kalkan, Sakarya University Training and Research Hospital, Sakarya, Turkey
Ebe – Sakarya /Turkey, Email: sacnsu54@gmail.com**Abstract**

Aims: The study was carried out to evaluate verniks kazeosa report of newborns according to Lund and Scanner burn table.

Methods: The research is descriptive and analytical. The universe of the study consists of primiparous pregnant women according to the hospital for spontaneous vaginal delivery at the age of 18-35. Sample review power analysis was done. The study was 125 pregnant with 0.30 effect size, 5% margin of error, and 90% power level. The consent formula was filled. Structured information formula, APGAR score, Lund and Browder burnt table and LATCH breastfeeding scale were used for data collection.

Results: The average age of pregnant women participating in the study is 23.2 (minimum 18, maximum 38), SS: 3.9, primary school where they have education (53.6%), not working (97.6%) and less than income (62.4 %) was detected. The oxygen saturation (SPO₂) in the blood of neonates was found to be 61.7 (minimum 55 maximum 67), SS: 2.7, 5. minute average was 83 (minimum 75 maximum 88), and SS: 3.1. The first minute APGAR score was 8.6 on average, and the 5th minute was 9.7. The mean varnish kazeosa score was 26.4, and the mean LATCH score was 8. The babies who had respiratory distress were found to have a lower score due to the LATCH breastfeeding scale than those who did not have respiratory distress ($p <0.05$). In the group with vernix caseosa level of 50% and more, respiratory distress was 93.3% and oxygen was given to all of them. The APGAR scores were found to be significant ($p <0.05$).

Conclusions: It was determined that newborns with a varnish caseosa rate of more than 50% had difficulty in breathing and received oxygen.

Keywords: Verniks Kazeosa, APGAR Scoring, Breastfeeding, Newborn, Lund and Browder Table

Introduction

Birth is a natural physiological event and does not require intervention [Kutlu et al.,2008,p.57.]. It is very important for the mother and newborn, as well as before and after birth. In this process, while trying to adapt to the external environment, the newborn tries to adapt to the physiological changes that may occur in the mother [Lang et al.,2018,p.26.]. 28 days after birth is considered a newborn period and the newborn tries to adapt to the external environment in this process. Especially the first 24 hours after birth is a very critical period for the newborn. The most heat

loss and respiratory distress are observed in this process. It is extremely important to keep the body balance at the highest level and ensure its continuity due to these problems that may occur in the newborn. The thermoregulation system is one of the most important mechanisms in the newborn's adaptation to the external environment [Taskin., 2014,p.294].

The main reason why the skin structure of newborn babies is different from the adult skin structure is that the epidermis and dermis layers of newborns are thin and many systems are not fully developed. It progresses in the same

proportion with the birth weight of the epidermis structure of newborns. Epidermis of newborns with low birth weight is thinner (Nikolovske et al., 2008, Singh G et al., 2008, p. 53,54.0) The skin of the newborn is critical in the process of transition from the uterus to the external environment. The most effective biological material in protecting the thermoregulation system of newborns is vernix caseosa.

Vernix kazeosa is a structure that starts to develop on the body surface from the beginning of the 20th week of pregnancy. Vernix kazeosa provides many activities such as preventing water loss at birth, temperature regulation until the newborn gets used to ambient temperature in the postpartum period and creating a barrier role. Many studies on vernix caseosa have been suggested that the amount and distribution of varnish caseosa is quite variable. Akiba (1995) reported in his study that it was inversely related to birth weight, for babies under 2000g and the findings were consistent (Nikolovske et al., 2008). Visscher et al. (2005) supports the study findings [p.440]. In line with all these data, it is to calculate the amount of vernix caseosa of newborns of healthy primipara pregnant women who have given birth at term with Lund and Browder burns and to determine that the results affect the health status of the baby. Data on APGAR score, SPO₂ value and breastfeeding level will be used to determine the health status of the baby.

In this study, to evaluate the amount of varnish kazeosa by quantitatively determining it with the table and to reveal its effects on APGAR score and breastfeeding levels with scientific data. In the light of these scientific data, it is aimed to contribute to the fact that newborns are aware of the condition so that vital signs can be monitored according to the amount of varnish kazeosa.

In the literature, many studies related to the biochemical properties of varnish caseosa and heat loss have been carried out, and although there are many other effects on varicose caseosa not only protecting the heat and immune system, there is almost no comparison of the amount of varnish caseosa in many studies (10 Mi'kova et al., 2014., Nishijima et al., 2019, p.2145-2149., Vavrusová et al., 2020,p.). It was made qualitatively, not quantitatively, and premature or out-of-date newborns were compared (Karakaya

Suzan & Cinar., 2018, p.141., Kobya Bulut., 2015, p.153.). As a result of this study, it is thought that midwives and nurses will be able to determine the amount of vernix caseosa of newborns after birth and help to identify and take precautions about respiratory risks that may occur in the baby, and will be a resource for the literature

Methods

Type of the Research: This study is descriptive and analytical, and was carried out to evaluate the varnish kazeosa level of newborns according to Lund and Browder burn table.

Universe and Sample of the Research

a. The universe of the research: The universe of the study consists of primipara pregnant women who applied to the hospital for spontaneous vaginal delivery at the age of 18-35.

b. Sample of the research; M Power analysis was performed to determine the sample of the study. A minimum number of 120 samples was obtained to reach 90% power level with 0.30 effect size, 5% margin of error.

Sampling criteria: Participants in the study were volunteers, primigravida, between the ages of 18-35, between 37-40 weeks of gestation, pregnant women with normal vaginal spontaneous delivery and no communication problems, and newborns weighing 2500-3900 grams and not washed after delivery.

Criteria for exclusion from sampling: It was determined as having a cesarean delivery, a chronic disease, and those with intrauterine growth retardation.

Data Collection Tools: Data collection forms were created in 4 parts. Structured data sheet, APGAR scoring, Lund and Browder burn chart and LATCH breastfeeding scale.

Information Form: The data collection form was developed by the researchers in line with the literature. It was created from a total of 20 questions. First part; socio-demographic characteristics (age, educational status, employment status, etc.), gestational features (gestational week, drugs used in pregnancy, etc.), individual habits (smoking, alcohol use) and the characteristics of the newborn (gender, weight, height, etc.) was created from the questions he received.

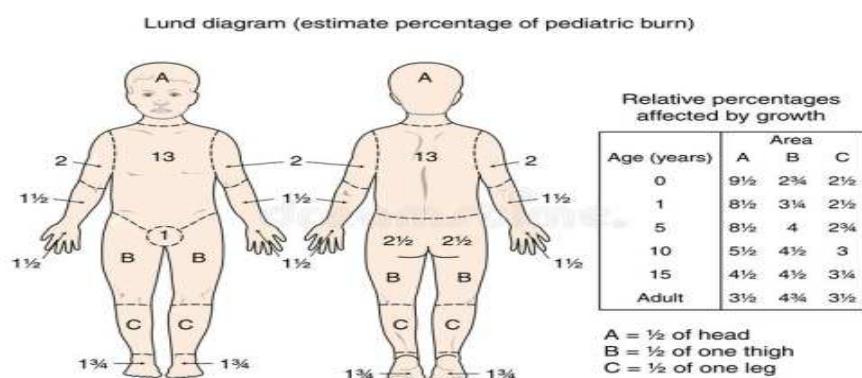
APGAR Score: The first minutes after the newborn is born is vital. APGAR scoring is a scoring used to determine the life-threatening values of the newborn in the 1st and 5th minutes

after birth. This scoring was created by doctor Virginia APGAR in 1952 to evaluate the health profile and respiration of newborns in the first 1 and 5 minutes after birth. The second study, which was performed on more patients than the first study, was conducted in 1958. APGAR scoring has become a standard scoring applied in all newborns after birth [The Apgar Score.,2015.].

5 parameters are evaluated with APGAR scoring. These; Color, Heart rate, Reflexes, Muscle tone,

Respiration. It is evaluated in the 1st minute, 5th minute and 10th minutes immediately after birth. As a result of the evaluation; Between 7-10, the baby is normal. If the APGAR score is below 7, it is re-evaluated at the 20th minute. If the result; Respiratory support is needed for the newborn between 4-6. Scoring result; Babies between 0-3 require urgent intervention and intensive care [The Apgar Score.,2015.].

Figure 1: Lund and Browder Burn Table



TABLO 1: Lund ve Browder kartları.

Bölge	0-1 yaş	1-4 yaş	5-9 yaş	10-14 yaş	15 yaş
Baş	19	17	13	11	9
Boyun	2	2	2	2	2
Ön gövde	13	13	13	13	13
Arka gövde	13	13	13	13	13
Sağ kalça	2.5	2.5	2.5	2.5	2.5
Sol kalça	2.5	2.5	2.5	2.5	2.5
Genital bölge	1	1	1	1	1
Sağ üst kol	4	4	4	4	4
Sol üst kol	4	4	4	4	4
Sağ ön kol	3	3	3	3	3
Sol ön kol	3	3	3	3	3
Sağ el	2.5	2.5	2.5	2.5	2.5
Sol el	2.5	2.5	2.5	2.5	2.5
Sağ bavlıdır	5.5	6.5	8	8.5	9
Sol bavlıdır	5.5	6.5	8	8.5	9
Sağ bacak	5	5	5.5	6	6.5
Sol bacak	5	5	5.5	6	6.5
Sağ ayak	3.5	3.5	3.5	3.5	3.5
Sol ayak	3.5	3.5	3.5	3.5	3.5
Toplam	100	100	100	100	100

Lund and Browder burn table was created by Lund and Browder of the year 1944. With this table, it is aimed to determine the burn surface. Although the burn surface is determined in practice and generally by the rule of nines (palm measurement) used in adults, Lund and Browder table, which handles the whole age group separately and is more suitable for children, is a very effective table [Lund & Browder., 1944,p.352].

While Lund and Browder burn chart provides more accurate total body burn measurement, it separates each region according to age based on age. Instead of treating the body as a whole, it separates the lower extremities into the thighs.

He separated a newborn baby more proportionally than the other burn table [Johnson & Richard., 2003,p.178.].

Nursing Scale LATCH: The validity and reliability in Turkey and Okumus Yenal (2003) and by Chronbach alpha value was found to be 0.95 [p.38.]. This scale looks at 5 criteria. The name of the scale consists of the initials of these five criteria. These:

- L (Latch on breast): Capturing the breast
- A (Audible swallowing): Swallowing motion of the newborn
- T (Type of nipple): Nipple type
- C (Comfort breast): Comfort of the mother's nipple
- H (Hold): Newborn breastfeeding position

While each item of this scale is scored between 0-2, the total score that can be obtained is 10. LATCH is used more frequently in studies because it is a scale that can be evaluated at any time of breastfeeding [Yenal et al.,2013,p.14.].

Ethical Aspect of the Research: Written permission from the department in which the study will be conducted and the approval of the ethics committee numbered 18/58 from the Health Sciences University Hamidiye Interventional Research Ethics Committee was obtained. After approval from the ethics committee, approval was obtained from the provincial health directorate to continue the thesis study.

Aim: The purpose of the study was first explained to the pregnant women who met the sample criteria at the application stage of the

study. It was reported to pregnant women that their identity would not be revealed and that they had human rights and patient rights, and this study would be used for scientific purposes only. Written consent was obtained from pregnant women who were voluntarily attached to the study.

Hypotheses of the Research: Ho: Lund and Browder burn table is a suitable method for the evaluation of Vernix caseosa.

H_i: Lund and Browder burn chart is not suitable for evaluation of Vernix caseosa.

Results

It was observed that 90.4% of the pregnant women were not planned, 33.6% of those who were at the 39th pregnancy week. It was not determined that 88% of the participants used blood medicine and 63.2% of them were using folic acid while using vitamin D and blood thinners. It was determined that 83.2% of the participants did not smoke and 12.8% quit because of pregnancy.

When the findings related to some features of newborns were examined, it was determined that the average weight of newborns was 3176.2 g and the average height was 49.9 cm. It was determined that head circumference was 34.2 on average and body temperature was 36.1 on average.

It was determined that the first minute measurement mean of SPO2 was 61.7, and the mean measurement average of spo2 was 83. It was determined that the average of the APGAR score in the first minute was 8.6, the APGAR score in the 5th minute was 9.7. The mean varnish case was 26.4 and the LATCH score 8.

According to Table 1, the age (23.2) height (160.4cm) and weight of the pregnant women participating in the study were determined to be 78 on average. When the distribution of mothers according to their graduates. It was determined that 97.6% of the pregnant women did not work and those with less income than 62.4% educational status was examined, it was determined that the majority (53.6%) were primary school

Table 2 shows the effect of mothers taking folic acid on vernix caseosa score average and APGAR score. According to the folic acid intake status, averages of varnish caseosa score,

averages of the first and fifth minute APGAR scores, and t-test results are determined to determine whether the difference between these averages is significant. Accordingly, while the mean score of varnish kazeosa did not differ significantly according to folic acid intake status ($p > 0.05$), a statistically significant relationship was found between the first and fifth minute APGAR score folic acid use status ($p < 0.05$). The first and fifth minute APGAR scores of those using folic acid were significantly higher than those who did not take folic acid.

When the relationship between vernix caseosa ratio and respiration of newborns is examined; All newborns with less than 50% of verniks kazeosa were found to have normal breathing, and those with 50% or more of vernix caseosa were found to have difficulty breathing (93.3%). There was a statistically significant relationship between evaluation parameters ($p < 0.05$).

When the relationship between the amount of vernix caseosa and oxygen delivery to newborns after birth is examined; None of those with less than 50% of varnish caseosa received oxygen, and nearly all (93.3%) received oxygen in the group with a varnish ratio of 50% or more. A statistically significant relationship was found between the evaluation parameters ($p < 0.05$).

Table 4 shows the results of the t test in independent groups to determine whether the difference between LATCH score averages and the difference between these averages is significant.

Accordingly, it was determined that the difference between the LATCH scores of those with normal respiratory status and disability was significant, and the LATCH score average of those with normal respiratory status was significantly higher than those with respiratory distress ($p < 0.05$).

The LATCH score varnish caseosa level was less than 25% and the group with 25% -50% was

found to be significantly higher than the LATCH average of 50-75% and 75%.

Discussion

In our study, 90.4% of pregnancies were unplanned and folic acid use was 63.2%. In the study of Koken et al. (2013), while 94.4% had knowledge about folic acid, folic acid use was found to be 48.6% in the first three months [p.87-91.]. It is seen that there is a similarity between the literature and our study result. In our study, the average weight of newborns was 3176 gr. and SPO² is 61.7% in the first minute and 83% in the 5th minute. The first minute APGAR score was 8.6 while the average was 5 minutes. The APGAR score was found to be 9.7. Demirdoven et al. In the study, it was seen that the term neonates were higher than the SPO² value in our study since the SPO² values were above 95% after the third minute. In the study of F et al. (2008), the average weight of the babies is 3360 gr. found and APGAR score 1. min. 8, 5 minutes is 10 . Demirdoven et al. Our research results are similar with both studies. In the study of Baltacı and Orsal on LATCH (2015), the babies whose APGAR score was moderately depressed obtained the result that these babies started breastfeeding later because they were kept for 2 hours in the nursery for observation and could not be given to the mother [p.19.]. In our study, the LATCH score was found to be 5 in babies with breathing problems, while the average LATCH score was 8 in babies with normal breathing. There was a significant difference in LATCH score between babies with normal and distressed breathing. It was determined that the amount of vernix caseosa was decreased in the LATCH score of newborns more than 50% and there was respiratory distress. In this study, newborns were divided into two groups, more than 50% and less in the burn table used to calculate the level of varnish caseosa.

Table 1: Findings Regarding the Socio-Demographic and Introductory Characteristics of Mothers (N:125)

Socio-Demographic and Introductory Features			
	Average	Min- Max	SD
Age	23.2	18 -38	3.9
Height	160.4	152-174	5.0
weight	78.0	58- 108	9.0
		n	%
Education status	Literate	2	1.6
	Primary education	67	53.6
	High school	55	44.0
	University	1	0.8
Employment status	Working	3	2.4
	Not working	122	97.6
Social security	Yes	125	100.0
Income status	Income less than expenditure	78	62.4
	Income and expenditure equal	47	37.6

*SD: Standard Deviation

Table 2: The Effect of Mothers Taking Folic Acid On Varnish Caseosa Score And Apgar Score (N = 125)

Mothers Removal Status	Folic Acid	Verniks Kazeosa average score			Average Apgar Score (1st minute)			Apgar average score (Five min)		
		n	Mean	SD	t	p*	Mean	SD	t	p*
Yes		79	26.2	22.6			8.7	0.6		9.8 0.5
No		46	26.8	27.7	-0.142 0.888		498.3 0.020*		2.382 0.019*	

**SD: Standard Deviation **p:p<0.05 **t: t test

Table 3: Respiratory Distress And Oxygen Uptake Status of The Varnish With The Percentage of Caseosa And The Newborn (N = 125)

Respiratory Distress and Oxygen Uptake				Percentage of Verniks Kazeosa		
	Less than 50%		50% and more		p*	
	n	%	n	%		
Respiratory Distressed	Normal	95	100.0	2	6.7	0.000*
	Distressed	0	0.0	28	93.3	
Oxygen uptake	Yes	0	0.0	28	93.3	0.000*
	No	95	100.0	2	6.7	

**p:p<0.05

Table 4: Results of The LATCH Breastfeeding Scale of Breathing And APGAR Score (N =125)

	Respiratory		Latch Score			t	p*
	n	Mean	SD				
Respiratory	Normal	96	8.8	0.9	13.520	0.000*	
	Distressed	29	5.5	1.6			

**SD: Standard Deviation **p:p<0.05 **t: t test

Conclusion and Recommendations

In this study, which was carried out to determine the evaluation of the newborn according to the Lund and Browder burn table, no significant difference was found between the folic acid intake status and the amount of varnish caseosa, whereas there was a significant difference between the first and 5th minute APGAR scores of the babies of pregnant women who received folic acid. It was found that the pregnant women who received folic acid had higher APGAR scores at the first and 5th minutes compared to the APGAR scores of pregnant women who did not take folic acid. When the relationship between respiration and the percentage of varnish caseosa was examined, it was determined that the breathing of babies with varnish caseosa was less

than 50% was normal in all of them, whereas 93.3% of those who were more than 50% were found to have trouble breathing. While none of the babies with less than% varnish kazeosa received oxygen, 93.3% of those over 50% received oxygen. When the relationship between breathing and LATCH score is analyzed, babies with normal breathing compared to those with breathing difficulties have higher LATCH scores, and those with LATCH scores of vernix caseosa less than 25% and between 25-50% of verniks kazeosa score from 50-75% to 75%. it was found to be significantly higher than the larger ones ($p <0.05$).

As a result of the study, it may be suggested that there is a separate midwife in the maternity hospital, and the use of Lund and Browder burns

and LATCH breastfeeding scale for neonatal care and assessment in the early postpartum period, and new studies on varnish caseosa according to Lund and browder burn table.

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