Orjinal Araştırma / Original Article

Follow Up of The Growth in the Term Small for Gestational Age Infants and the Factors that Influence Growth

Term SGA (Small for Gestational Age) İnfantlarda Büyümenin İzlemi ve Büyümeyi Etkileyen Faktörler

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Abstract

Aim: Infants born small for gestational age (SGA) confront many problems in adulthood. Most of them catch up with their peer as growth in the first six months. In this study, we investigated the perinatal predictive factors that influence postnatal catch-up growth in the term SGA infants.

Material and Method: The study included seventy-three term, healthy infants. Prenatal, natal, and postnatal information forms were filled for each infant. Infants were examined in 0, 1, 6, and 12th months. The information form was recorded. At the examination time parameters concerning growth like weight, length, and head circumference were recorded. Postnatal growth catch-up was defined as above the 10th centile according to the reference population growth curves. By the SPSS 10,0 version for windows prenatal, natal and postnatal factors that influence postnatal catch-up growth were investigated.

Results: Infants in the Catch up (CU) group at the first month were significantly taller than the non-catch-up (NCU) group. APGAR scores of the group CU at the sixth month were significantly more increased than group NCU. Length and head circumference of the sixth month and body length of the twelfth month were significantly more increased than the NCU group at the sixth month. Other infections and usage of vitamin D in the group NCU in the twelfth month were significantly more increased than the group CU. Length and head circumference at the twelfth month in group CU were significantly more increased than group NCU.

Conclusion: For infants with born SGA, it is very important to follow up postnatal growth patterns and growth velocity. Body length, head circumference, and APGAR scores can be a positive predictor for the postnatal growth catch up for healthy term SGA infants. The usage of vitamin D and other infections can also be negative predictors. Infants that catch up growth first few months may anticipate that will be continued growth velocity for six months.

Keywords: SGA infant, growth catch up, perinatal predictors

Öz

Amaç: SGA doğan infantlar yetişkin hayatta birçok riskle karşı karşıyadırlar. Postnatal hayatta çoğu ilk 6 ay içerisinde hızlı bir büyüme göstererek yaşıtlarının büyüme yüzdelerini yakalarlar. Bu çalışmada sağlıklı term SGA infantların büyümeyi yakalamaya etkisi olan perinatal prediktif faktörler incelendi.

Gereç ve Yöntem: Çalışmaya sağlıklı 73 term SGA infant katıldı. Her hasta için prenatal, natal ve postnatal bilgi formu dolduruldu. İnfantların 0, 1, 6 ve 12. aylarda fiziki incelemeleri yapıldı ve geçmişe yönelik anamnez formu dolduruldu. Muayene sırasında kilo, boy ve baş çevresi gibi büyüme ile ilgili parametreler kaydedildi. Postnatal dönemde büyümeyi yakalama kriteri olarak referans toplumun büyüme eğrilerinde 10. persentilin üzerine çıkma olarak tanımlandı. Büyümeyi yakalama üzerine SPSS 10.0 kullanılarak perinatal, natal ve postnatal faktörlerin etkisi araştırıldı.

Bulgular: Bulgular 1. ayda catch-up (CU) grubundaki infantların boyu non-catchup (NCU) grubundakilerden anlamlı derecede daha uzun idi. 6. aydaki CU grubunun APGAR skorları, 6.ayda ölçülen boy ve baş çevresi, 12. ayda boy ölçümleri NCU grubuna göre daha fazla bulundu.12. aydaki NCU grubunda diğer enfeksiyonlar ve D vitamini kullanımı CU grubuna göre daha fazla bulundu. Vakaların 12. aydaki boy ve baş çevreleri NCU grubuna göre daha fazla bulundu.

Sonuç: SGA'lı doğan infantların postnatal büyüme paternlerini ve büyüme hızlarını takip etmek son derece önemlidir. Sağlıklı term SGA infantlar için postnatal büyümeyi yakalamada boy ve baş çevresi ve APGAR skorunun pozitif belirleyici, D vitamini ve diğer enfeksiyonların negatif belirleyiciler olarak kullanılabilir. Ve ilk aylarda büyümeyi yakalayan infantların büyüme hızlarını özellikle ilk 6 ay koruyabilecekleri öngörülebilir.

Anahtar Kelimeler: SGA infant, büyümeyi yakalama, perinatal belirleyiciler

INTRODUCTION

Fetal development is affected by many factors that affect growth. Fetal factors are more prominent in the first half of pregnancy, and maternal environment and uteroplacental factors are more prominent in the second half of pregnancy. In this growth process, factors affecting the fetus cause growth retardation. SGA (Small for gestational age) definition is used to define infants whose birth weight or birth height is below –2 SD (Standard Deviation) for that gestational age according to the data of the reference society.

While the SGA incidence is observed at an average rate of 16% in societies, this rate has been detected as 7% in industrial areas and 41, 5% in South Asia.[1,2] Approximately 90% of all SGA births are term SGA infants.[2] Infants born SGA face increased risks in adult life in terms of persistent short stature, insufficient intellectual functions, and chronic diseases such as Type-2 DM (Diabetes Mellitus) and ischemic heart disease.[3] Most infants with SGA catch up with the growth percentages of their peers after birth gradually. Mostly, this catch-up growth is achieved in the first 6 months of life.[4] Only a small portion of infants; especially premature babies continue to catch up towards the second years of their lives. Many factors play a role in postnatal growth. Early detection of babies who cannot catch growth parameters after birth and follow-up of such babies in terms of the risks they will be exposed to in both adolescence and adult life are very important. In this study, it was aimed to evaluate catch-up growth and factors that influence catch-up growth by making anthropometric measurements such as height, weight, and head circumference at the first 1, 6, and 12 months in healthy term SGA babies.

MATERIAL AND METHOD

Term infants born in Selçuk University Meram Medical Faculty and Faruk Sukan Maternity Hospital between October 2004 and October 2005 were included in our study. Ethical approval was obtained from the ethics committee of the Selcuk University Medical Faculty with the decision dated July 1, 2004, and numbered 2004/078. Those who are between 38 and 42 weeks according to the last menstrual period, whose term and birth weight or height are below 10% according to the Lubchenko curve as SGA (small for gestational age), those between 10 - 90% as AGA (appropriate for gestational age), those above 90% as LGA (Large for gestational age)" were accepted.[5] Gestational age was determined according to the last menstrual period or ultrasound measurements. For babies who were not followed up during pregnancy and mothers who did not know the first day of their last menstrual period, the gestational ages on the first day of life were determined by Ballard scoring.[6] The infants included in the study group were physically examined on the day of birth, at the 1st, 6th, and 12th months, and anthropometric measurements such as height, weight, and head circumference were performed. Follow-up was done with the growth chart of Turkish children made by Neyzi and her friends.[7] Identity information, family information, prenatal, natal, and postnatal information forms of each baby's family were filled at the time of delivery. If they were hospitalized, the length of stay and the reason were recorded. Babies with dysmorphic findings, anomaly, prematurity, stage III hypoxic-ischemic encephalopathy, and major congenital abnormalities that would affect growth during follow-up were excluded from the study. Routine nutritional recommendations were given to all babies on nutrition issues. They were also advised to take 400 units/day of vitamin D. Iron supplements were recommended to each family at 4-6 months. During the follow-up of all babies, records including the measurement of growth, nutritional history, starting age and type of supplementary food, use of vitamin D, use of iron preparations, previous illness, and chronic disease were recorded. Catch-up growth was considered as the weight and height increase over the 10th percentile according to age and gender during follow-up.[8] The group that caught the growth was called catch-up (CU), the group that couldn't catch it was called non-catch - up (NCU). Variables in prenatal, natal, and postnatal periods that may affect growth between the CU and NCU groups were investigated. 73 term SGA babies were included in the study group. Physical examinations were performed after the height, weight and head circumference of the babies were recorded at birth. The information form has been filled in. The weight measurement was done naked by the same person with the baby scale. Height measurement was measured with a height measuring board with a fixed head and a movable foot part. Head circumference was measured using a non-flexible plastic measuring tape using the glabella and the area where the occipital region is the most protruding. Babies who lost their lives in the neonatal period and those with a deficiency in anthropometric measurements such as height, weight, and head circumference were not excluded from the study due to the presence of demographic data. Statistical analyzes were performed using SPSS version 10.0. Parametric data were recorded as mean±standard deviation. Categorized data were compared using Chi-square analysis. T test was used to evaluate the effect of independent variables on growth patterns. For statistical significance, p<0.05 was accepted.

RESULTS

73 term SGA newborns were included in the study. The study group was re-evaluated at 1, 6, and 12 months. The group that reached the 10th percentile by weight was defined as catch-up (CU), and the group that could not catch it as non-catch-up (NCU). Due to the nature of the study, it was a prospective and follow-up study, and the number of patients attending regular controls decreased, and 73, 38, 29, and 23 infants participated in the study at 0, 1, 6, and 12 months, respectively. CU and NCU groups were compared for each control period. The general characteristics of the cases are shown in **Table 1**.

Table 1. Fundamental characteristics of the study group		
Characteristics	**N (Number)**	**Mean±SD**
Birth weight (gr)	73	2255±195
Birth length (cm)	71	46.7±2.2
Birth head circumference (cm)	62	32.8±1.2
HC at 1st month	35	35.2±1.2
Length at 1st month	37	50.75±2.05
Weight at 1st month	38	3355±553
HC at 6th month	19	42.1±1.4
Length at 6th month	23	63.2±2.5
Weight at 6th month	29	6480±800
HC at 12th month	20	46.05±1.5
Length at 12th month	22	73±2.6
Weight at 12th month	24	9014±1021
Breastfeeding		
Yes (%)	47(97)	
No (%)	1 (3)	
Breastfeeding for 3 months (%)	3 (6.3)	
Breastfeeding for 6 months (%)	4 (8.3)	
Breastfeeding for 12 months (%)	30 (62.5)	
Breastfeeding duration		9.43±2.7
Formula use		
Yes (%)	23 (51)	
No (%)	22 (49)	
For 1 month (%)	21 (46.7)	
For 3 months (%)	1(2.2)	
For 12 months (%)	1 (2.2)	
Formula duration	45	2.73±3.63
Vitamin D use duration	45	8.39±4.05
The rates of vitamin D use		
Yes (%)	43 (95.6)	
No (%)	2 (4.4)	
For 1 month (%)	3(6.8)	
For 6 month (%)	2 (4.5)	
For 12 months (%)	20 (45.5)	
Iron use		
Yes (%)	32 (74.4)	
No (%)	11 (25.6)	
For 3 months (%)	6 (14)	
For 6 months (%)	10 (23.3)	
For 8 months (%)	2 (4.7)	
Duration of iron use		3.67±2.67
The history of infection		
Yes (%)	27 (61.4)	
No (%)	17 (38.6)	
URTI (%)	19 (43.2)	
1 time	14 (31.8)	
2 times	3 (6.8)	
4 times	2 (4.5)	
UTI (%)	1 (2.3)	
LRTI (%)	13 (29.5)	
1 time	9 (20.5)	
2 times	4 (9)	
CNS infection (%)	0(0)	
Acute gastroenteritis (%)	1 (2.3)	
Other infections (%)	4 (9)	

Abbreviations: HC: Head circumference; URTI: Upper respiratory tract infection; UTI: Urinary tract infection; LRTI: Lower respiratory tract infection; CNS: Central nervous system

The number of cases evaluated in the first month was 38. Achieving growth was detected at a rate of 55.3% among all cases. When the groups that achieved growth and those who failed to achieve growth were compared, their height at the end of the first month was 51.7±1.46 cm in the CU group and 49.5±2.98 cm in the NCU group. There was a statistically significant difference between the two groups ($p < 0.05$). Infants in the CU group were taller. There was no significant difference between the two groups in terms of other variables.

Height and head circumference measured at 6 months were significantly higher in the CU group. The 6th month height and head circumference in the CU and NCU groups were 64.18±1.46 cm, 61.67±3.2 cm and 42.74±0.96 cm, 41.07±1.53 cm, respectively ($p < 0.05$). In the follow-up of the cases, height and weight measurements at 12 months were significantly higher in the CU group ($p < 0.05$).

Significant associations were found between height at 6th month, head circumference at 12th month, height at 12th month, head circumference, and duration of vitamin D use related to achieving growth at 12th month. At the sixth month, head circumference was 43±1 cm and 39.8±1.2 cm, respectively, in the CU and NCU groups, while height measurements were 63.6±2 cm and 59±1 cm, respectively. The height and head circumference of the cases at 12 months were significantly higher in the CU group. The height was 73.7±2.2 cm in the CU group, 69±1 cm in the NCU group, 46.5±1.3 cm in the head circumference in the CU group, and 43.8±0.7 cm in the NCU group, and this difference was found to be significant ($p < 0.05$). While there was no significant difference between the two groups in terms of the use of breast milk, formula, and Fe preparations during the first year of life ($p > 0.05$), the duration of vitamin D use was significantly higher in the NCU group ($p < 0.05$). The mean duration of vitamin D use was 7.75±4.9 months in the CU group, while it was 12±0 months in the NCU group ($p < 0.05$).

DISCUSSION

Many factors related to SGA birth have been identified. These include fetal, maternal, uteroplacental, and demographic factors. Demographic factors; Groupings can be made such as maternal age too advanced or too young, mother's weight and height, born of mothers with low birth weight, nulliparity or grand multiparity, mother's inability to gain enough weight during pregnancy, maternal history of a baby with SGA before.

The average height of the mothers was 160.9±7.17 cm. All of the infants in the study thought that when babies with SGA, maternal height was found close to the average height of women in Turkey. Since the comparison of AGA and SGA groups was not made in our study, the relationship between maternal height and SGA birth was not evaluated. However, when the effect of maternal height on growth catch-up was evaluated, it was observed that there was no significant effect on the groups. Since the birth weights of the mothers of the infants participating in the study were not known, the mother's

birth SGA and the relationship between the participants in the study group and growth catch-up could not be evaluated. In the literature, nulliparity and grand multiparity SGA have been associated with birth and considered as risk factors.[9] Considering that 55.4% of the mothers of babies with SGA in our study were their first pregnancy, it is consistent with the literature. There were no grand multipara mothers among our cases. Previous SGA sibling or stillbirth history has been associated with SGA birth.[10] In the history of our cases, 7.7% had a previous sibling history with SGA and a stillbirth history in 5.9%.

Chronic diseases in the mother, placental, uterine and cervical anomalies are other risk factors for the development of a baby with SGA. No chronic disease, placental, uterine and cervical anomalies were found in the mothers of the babies with SGA who participated in our study. Smoking and alcohol consumption of the mother are also important risk factors. None of the mothers consumed alcohol during their pregnancy, only 7.7% of the mothers had smoked. In the study of Harding et al.[8], It was shown that only the mother's use of aspirin and the gestational age, when diagnosed with SGA, had significant effects on growth catch-up between antenatal variables. In our study, no positive or negative effects of antenatal variables on growth catch-up could be detected.

One of the factors that is thought to have an effect on postnatal growth is nutritional status of the infants. Different results were obtained in breast milk and formula comparisons. In the study by Ounsted et al.[11] , They reported that infants who were breastfed showed faster growth than those fed with formula. A study by Fewtrell et al.[12] , who investigated the effect of breast milk, term standard formula, and enriched term formula on postnatal growth in term SGA infants, showed that the type of nutrition did not affect the linear growth process. They suggested that those who catch the growth in the first months maintain their growth rates until the 9th month, and they found that the earlier catch-up growth is associated with longer duration of this process. In our study, 55.3% of the cases achieved growth cutch-up in the postnatal 1st month. They maintained similar rates to these rates in the 6th month. The rate of those who achieved growth in the 6th month was 62.1%. In the same study, they found that the 9th-month head circumference was greater than those using formula.[11] In our study, 97.9% of the infants used breast milk, and 46.6% used formula. The mean duration of breast milk intake was 9.43±3.7 months and 62.5% of the infants had maintained breast milk consumption for 12 months. Similar to the study conducted by Fewtrell et al.[12], We did not find a significant difference between the groups that caught up and failed catch-up growth in terms of breast milk and formula use. In the study of Arefeen et al.[13], Data related to breast milk and nutrition effect on growth catch-up were found similarly. It has been shown that among those receiving breast milk, those with good birth weight and full-term AGA infants continued to stay above -2 SD almost throughout the infantile period. In other words, birth weight was shown in the foreground rather than

breast milk. In our study, we did not find a positive relationship between breast milk intake and growth catch-up. In the studies of Arefeen et al.[13], In which premature babies with SGA were included and the growth follow-up of infants was investigated, over 1000 infants were followed, it was shown that the growth rate got slower as the birth weight decreased. Since premature babies were also evaluated in this study, the complications of preterm birth and problems associated with prematurity may have affected the growth rate. In our study, although there was no statistically significant difference for each control period, the average birth weight was higher in the groups that achieved growth catch-up. In the same study, there were differences in the general characteristics of the population and the selection of cases. More than half of the selected infants were males. In our study, 46% of the infants were male. 75% of the mothers are illiterate, 60% of the fathers did not have any level of education. 83.6% of the mothers of the infants in our study were primary school graduates. It is known that SGA birth rates in African countries with low levels of education increase up to 70%, although the education level and SGA vary according to the societies studied on SGA birth.[21] Studies have shown that maternal education level does not affect catch-up growth.[15] Similarly, we did not find a relationship between maternal education level and achieving growth catch-up. Also, while 26% of the mothers of infants born SGA were the first pregnancy, 23% were the second pregnancy, 55.4% of the mothers in our study were the first and 24.6% were the second pregnancy. While 31% of the mothers had a stillbirth history before, 5.9% of the mothers included in our study had a stillbirth history. Basic differences such as education level, history of stillbirth, development level, and perinatal health services seem to be related. In their studies conducted in Bangladesh, there were significant differences between the average birth weights of infants. While the mean birth weight of the babies was 2516±404 gr, the mean birth weight of the infants in our study was 2255±195 gr. The average height at birth was similar. It was 47.7±2.3 cm and 46.7±2.28 cm, respectively. In their study, a strong relationship was found between growth patterns and anthropometric measurements at birth. They did not find a significant difference at any measurement time between the groups that were allocated to every 500 grams according to their birth weight. While there was little difference between preterm AGA and term SGA infants, the mean birth weight of preterm SGA infants at any point was significantly lower than the other groups. The reason for this may be due to the negative effects of problems such as prematurity and low birth weight on growth. Although premature babies were not included in our study, we found that the group that achieved growth catch-u in the measurements made at birth and in the following months had a significantly higher regarding height and weight than the group that failed to achieve growth. Accordingly, better height and weight at birth and early follow-up may be a determining factor in achieving postnatal growth. Term AGA infants were also included in the studies of Arefeen et al.[13] They found that heavier infants grew

faster in the first months of life, especially in the first 3 months, compared to lighter infants, and they maintained this growth pattern until the second half of life. Infants with normal birth weight showed an average monthly weight gain of 73 g more than low birth weight infants. In our study, although there are no babies above 2500 gram, it is understood that the rate of catching postnatal growth of infants in the 1st month and 2nd month is 55% and 70%, and it is understood that rapid growth is observed in the first months and the growth potential of this group is better.

In the study conducted by McCowan et al.[15] In which perinatal markers were investigated on the growth parameters of SGA infants at the 6th month; infants who have catch-up growth at the 6th months of age, in terms of maternal factors such as maternal age, height, weight at birth, being married, maternal education, having their first pregnancy, hypertension during pregnancy, smoking; There was no statistically significant difference between normal and short groups. They found that among the maternal factors, mothers had significantly more European ethnicity in the group with normal height than in the group with a short height. Although there is no significant difference between maternal heights, some racial factors may determine the postnatal growth pattern. In our study, although ethnic origin was not taken into account, we obtained similar results in terms of general characteristics of maternal factors other than maternal education and smoking. Although no statistical significance was found in terms of these factors in our study, the smoking rate of mothers was found to be between 20 and 30% in their study, and 7.7% in our study. In their study, while the rates of secondary education and tertiary education were around 45 and 50%, 83.6% of the mothers in our study were only primary school graduates. In the same study, when intrauterine and fetal factors that may affect growth were examined, in the group whose height was normal in the 6th month, the fetal abdominal circumference was larger, the gestational week was better, the birth weight was better, the birth weight and the height had smaller Z scores had positive predictive values. They found that the use of antenatal steroids, being under 32 weeks at birth, being hospitalized in the neonatal period, staying in the hospital for a longer period, and having a chronic lung disease had negative predictive values.[15] In our study, premature babies were excluded from the study and none of the cases received steroids during the antenatal period. Similarly, birth weights and heights were higher in the CU group. However, no significant difference was found between the groups in terms of the reason for hospitalization and the day of hospitalization in the neonatal period.

Although vitamin D was not investigated as a marker in studies on growth catch-up, the reason why vitamin D use was among the negative determinants in our study; The mothers in the group NCU thought that their babies were not growing and took care of the use of vitamin D, which may be due to the neglect of the mothers in the other group because their babies seem healthy.

In the study of McCowan et al.[15], In which groups with normal and slow growth according to weight in the 6th month were compared, they found significant differences in terms of height and head circumference Z scores at birth, among the parameters listed above. They observed that the group whose weight was normal for the 6th month had better birth height and head circumference Z scores.[15] Especially in the follow-up of infants born with SGA, published by Albertson et al.[16] in 1993, they showed that the male gender achieved faster growth than girls in terms of weight.[16] In our study, we did not find any significant difference in terms of gender, as in McCowan's study. Many different studies have shown that infants with low birth weight, especially those below 1500 g, exhibit very slow and late growth in the postnatal period, especially in the first year, and face great risks in the growth period.[17-19] In some studies on premature infants, data showing that inappropriate nutritional regimens after hospital discharge are determinative in terms of growth failure have been obtained.[20,21] In our study, we did not find any significant difference between the groups that caught up in growth and failed growth in terms of nutrition. In a similar study by Harding et al.[8], SGA infants were followed for 18 months and prenatal and postnatal markers were examined on growth catch-up. Unlike our study, the groups were divided into 4 subgroups as early catch up, transient catch up, late catch-up, and non catch up. Variables were including similar parameters to our study. Most of the cases, 74%, were in the early catch-up group which they were the group that reached the 10th percentile by weight in the first 6 months. 8% was in the group that caught up with growth temporarily, 7% was in the group that caught up with growth late, and 11% was in the group that failed to achieve growth. The infants participating in our study were followed for 12 months, and our groups were divided into two groups, the group that could catch-up growth or not. In our study, the rate of those who achieved catch-up growth in the 6th month was determined as 66.2%. In their study, in which infants were followed for 18 months, significant differences were found regarding the gestational week when SGA was diagnosed, and the use of aspirin during pregnancy. The week of gestation, when diagnosed with SGA, was found to be significantly lower in the non-catch-up group and the late catch-up group. This parameter was not included in the study variables since the parents of the infants included in our study were diagnosed with SGA only at birth and in the near-term period due to low sociocultural levels or due to irregular follow-up. Making the diagnosis of SGA in the early weeks of gestation may be related to the etiological factors causing symmetrical SGA. It is a known fact that the rate of catch-up growth is lower in symmetrical SGA babies. In our study, only one mother used aspirin during the antenatal period, and that infant was included in the group that achieved catch-up growth at the 4th month and maintained its place in the group that achieved catch-up growth until the end of the 12th month. When the effect of postnatal variables in Harding's study on catching growth is examined; they found significant

differences between the groups in terms of the gestational week, birth weight, height, and head circumference; standard deviation scores (SDS) of birth weight, height, and head circumference; placental weight, placenta/birth weight ratios, oxygen support requirement, hospitalization rates and length of hospital stay. The NCU group had significantly lower birth weight, height, and head circumference. In our study, premature babies were not included, and no significant difference was found between the group that caught up in growth and the group that failed in terms of these parameters at birth. However, some parameters such as height, weight, and head circumference in the follow-up were found significantly higher in the group that achieved catch-up in growth in some months. In Harding's study, SDS of birth weight, height, and head circumference were found to be significantly lower in the NCU group. Many of the parameters listed above may be due to prematurity and its complications, immaturity of many systems, and consequent problems of adaptation to postnatal life and nutritional deficiencies. In the study mentioned above, hospital duration, oxygen support duration, and hospitalization rates in the postnatal period were found to be significantly higher in the group that failed to achieve growth. In our study, we did not find any significant difference between the groups in terms of the cause of hospitalization and length of stay in the postnatal period. There may be several reasons why there was no significant difference in our study. Since the groups consist of term infants, it can be interpreted as the absence of complications of prematurity, the shorter length of hospitalization, and to be neonatal jaundice among the most common causes of hospitalization. The average hospital stay of the infants in our study was 2.76 days. In their study involving premature babies, this difference can be understood more easily considering that the average hospital stay of the group that failed to achieve catch-up growth was 35 days.[8]

In the group that failed to achieve catch-up growth which an average birth week of 33 weeks this group, supplemental oxygen was significantly higher than the other groups. Only one of the patients required hospitalization due to respiratory problems in our study. It was observed that this baby was also in the NCU group in his 12-month follow-up. As a result, it is a known fact that the foundations of many problems observed in adolescence and advanced stages of life are laid in intrauterine life.[22,23] In this context, it is very important to know what problems await babies born with IUGR, prediction, and follow-up of growth patterns in the postnatal period, and measures that can be taken regarding preventive medicine. Especially pediatricians should discuss with their parents of infants born with SGA in all aspects of IUGR and the problems awaiting these babies, including psychological support. Furthermore, these babies face increased risks in terms of neurological development, poor school performance, and socialization deficiencies. Another known risk Metabolic Syndrome in which include type 2 DM, hypertension, obesity, and hyperlipidemia, is observed in adolescents and adults. Consequently, the increased risk of cardiovascular system

diseases should be discussed with parents. Another important problem is also the persistent short stature observed in 10% of babies born SGA. It is a known fact that most SGA infants catch up in growth compared to their peers in the first 6 months of life. Infants who fail to catch up with their peers, especially in the 18th month, may also have a shorter adult final height.

CONCLUSION

Factors related to SGA birth and postnatal growth should be well known and timely and on-site interventions should be made in terms of both medical and psychological support to deal with these problems. Multi-center and detailed studies with a large number of cases should be planned to determine the factors related to evaluate catch-up growth in the postnatal period.

ETHICAL DECLARATIONS

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