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ORIGINAL ARTICLE
ORİJİNAL ARAŞTIRMA

Evaluation of the Prevalence of Allergy in Babies Born by Cesarean Section

Sezaryen ile Doğan Bebeklerde Alerji Görülme Sıklığının Değerlendirilmesi

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Abstract

Aim: The aim of this study is to investigate and examine the possibility that cesarean section, which is becoming increasingly common today, may cause risky conditions such as allergies not only for the mother but also for the baby in the future.

Material and Method: The questionnaire was applied to the mothers who applied to the Family Medicine outpatient clinic between July and November 2020, who accepted to participate in the study and received written consent.

Results: Of the 90 participants included in the study, 45 (50%) had cesarean section and 45 (50%) had a normal birth. No variation was found according to the type of delivery in those whose children were diagnosed with allergies. Likewise, there was no statistical relationship between the presence of allergies and the variables we looked at. Among the other variables examined, there was only a significant difference in smoking during pregnancy according to the mode of delivery ($p = 0.041$).

Conclusion: Although it is prohibited off-label cesarean delivery, which can be left to the patient due to commercial concerns, is a delivery method to be chosen by a doctor only in the presence of an indication. Cesarean section may have complications for the mother and the baby, and the recommended method is to deliver the baby with normal delivery through the vaginal canal. Pregnant women should be informed that normal birth is the healthiest delivery method with correct information.

Keywords: Allergy, birth, cesarean section

Öz

Amaç: Bu çalışmanın amacı günümüzde gittikçe yaygınlaşan sezaryen ile doğumun sadece anneye değil ileri de bebek için de alerji gibi riskli durumlar ortaya çıkarabileceği ihtimalinin araştırılarak irdelenmesidir.

Gereç ve Yöntem: Araştırmaya Temmuz – Kasım 2020 tarihleri arasında Aile Hekimliği polikliniğine başvuran, 2 yaş altı tek çocuğu olan annelerden çalışmaya katılmayı kabul edip, yazılı onam alınanlara anket uygulanmıştır.

Bulgular: Çalışmaya dahil edilen 90 katılımcıdan 45 (%50) tanesi sezaryen, 45 (%50) tanesi normal doğum yapmıştı. Çocuğu alerji tanısı alanlarda doğum şekline göre bir değişkenlik saptanmadı. Aynı şekilde alerji varlığı ile baktığımız değişkenler arasında istatistiksel bir ilişki saptanmadı. Bakılan diğer değişkenlerden sadece gebelikte sigara kullanımında doğum şekline göre anlamlı bir farklılık vardı ($p=0.041$).

Sonuç: Günümüzde endikasyon dışı yasak olmasına rağmen ticari kaygılarla hastanın kendine bırakılabilen sezaryen doğum, sadece endikasyon varlığında doktor tarafından seçilecek bir doğum yöntemidir. Sezaryen doğumunun anne ve bebek için komplikasyonları olabilmekte olup, önerilen yöntem, bebeğin vajinal kanaldan geçerek normal doğumla doğurtulmasıdır. Gebeler doğru bilgilendirmelerle normal doğumun en sağlıklı doğum yöntemi olduğu anlatılmalıdır.

Anahtar Sözcükler: Alerji, doğum, sezaryen

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INTRODUCTION

Cesarean section is a method of birth that can only be done with the decision of a doctor in the presence of an indication, and although it is prohibited off-label in our country today, it can still be left to the decision of the patient due to commercial concerns (1). If cesarean section is indicated, 39 weeks of gestation seems to be the most appropriate week in cases where the gestational age is advanced (2,3). However, even if cesarean section is performed at 39 weeks, it may cause 4-5% respiratory distress in the newborn, and this situation once again shows the importance of normal birth (2).

In deliveries performed by cesarean section, since microbial exposure decreases, the development of allergies increased 7 times apart from respiratory distress (3,4). However, the relationship between cesarean section and baby allergy is not clear. Situations that increase the possibility of the immune system to encounter antigen reduce the risk of allergy formation in the person, as they increase the response formation. The sooner viral antigens are encountered, the more Th1 dominates and therefore the better the Th2 balance is established. The hygiene hypothesis, based on this mechanism, shows that the number of individuals diagnosed with "allergy" due to the fact that people comply with hygiene rules more in developed countries (3-5). The aim of this study is to evaluate the relationship between cesarean section, which is becoming increasingly common today, and the frequency of allergies in the baby.

MATERIAL AND METHOD

The study has been done by observational and analytical methods. The study group consists of mothers who applied to Hacettepe University Faculty of Medicine Family Medicine Outpatient Clinic between July 2020 and November 2020 for any reason, have a single child under the age of 2 and gave birth by cesarean section. The control group consists of mothers who applied to Hacettepe University Faculty of Medicine Family Medicine Outpatient Clinic between July 2020 and November 2020 for any reason, have a single child under the age of 2 and gave birth normally. 45 people were included in the study and control groups. Before starting the study, consent was obtained from the Non-Interventional Clinical Research Ethics Committee of Hacettepe University (23.06.2020, Decision number: 2020 / 12-24).

With the questionnaire we created to the study and control groups maternal age, type of delivery (reason if cesarean section), duration of pregnancy, whether the mother has any health problems before / during / after birth, exposure to drugs / cigarettes / alcohol / substances / environmental pollution during pregnancy; the child's age, history of allergic disease (if any, treatment related to this), phenotypic characteristics (hair, eye, skin color), breast milk intake time, time to start supplementary food; the mother and her family were asked about the history of allergic diseases and whether there was animal care at home.

In order to make our study more reliable, we included only mothers with a single child under the age of 2 so that those with more than one child did not confuse the birth information and that this information did not cause forgetfulness.

Data were analyzed with IBM SPSS V23. Chi-square test was used for comparison of categorical data. T test was used to compare the ages. Analysis results are presented as frequency (percentage) for categorical data, mean and standard deviation for quantitative data. The significance level was taken as $p<0.05$.

RESULTS

Of the 90 participants included in the study, 45 (50%) had cesarean section and 45 (50%) had a normal birth. The average age of all participants was 35 ± 4.192. The average age of those who gave birth by normal delivery was 35.11 ± 4.24, and the mean age of those who gave birth by cesarean was 35.56 ± 4.17. The mean age of the children was 12.58 ± 6.131. The mean week of delivery was 37.89 ± 1.394. 43 (47.8%) of the children of the participants were girls and 47 (52.2%) were boys. The mean time to start supplementary food was 6.46 ± 1.040 months.

The comparison of all the variables studied according to the type of birth is shown in **Table 1.** No statistically significant correlation was found between the child's hair color, eye color, skin color, breastfeeding, time of supplementary food, pet feeding, allergy in the participants or their family, gender distribution, presence of allergies in the child and the type of delivery ($p>0.05$) did not change based on its presence.

No variation was found according to the type of delivery in those whose children were diagnosed with allergies. All of the participants who used cigarette / substance during pregnancy had only smoking, and there was a significant difference in smoking during pregnancy according to the type of delivery ($p=0.041$). While 91.1% of those who gave birth normally did not smoke, all of the participants who gave birth by cesarean were not smoking.

Except for the use of antibiotics, there was no drug use in all participants who used medication during pregnancy, but there was no variation according to the mode of delivery ($p>0.05$). Vitamin use was not included in the use of medication because there was no participant who did not use vitamins during pregnancy. There was no statistical relationship between the children's hair color, skin color and eye color with the presence of allergies that we evaluated additionally in the study ($p>0.05$).

Table 1. Comparison of variables according to the type of delivery

	Normal birth n (%)	Cesarean section n (%)	Total n (%)	p
Is there any drug use during pregnancy?				
Yes	26 (57,8)	21 (46.7)	45 (52.2)	0.291
No	19 (42,2)	24 (53.3)	45 (47.8)	
Does smoking or substance use during pregnancy?				
Yes	4 (89)	0 (0)	4 (4.4)	0.041
No	41 (91.1)	45 (100)	86 (95.6)	
Was there a problem during the birth?				
Yes	1 (2.2)	2 (4.4)	3 (3.3)	0.500
No	44 (97.8)	43 (95.6)	87 (96.7)	
Has there been a problem after birth?				
Yes	-	-	-	-
No	45 (100)	45 (100)	90 (100)	
Has your child been diagnosed with an allergy?				
Yes	11 (24.4)	9 (20)	20 (22.2)	0.400
No	34 (75.6)	36 (80)	70 (77.8)	
Has your child breastfed?				
Yes	43 (95.6)	40 (88.9)	83 (92.2)	0.217
No	2 (4.4)	5 (11.1)	7 (7.8)	
Do you have any allergies?				
Yes	1 (2.2)	5 (11.1)	6 (6.7)	0.101
No	44 (97.8)	40 (88.9)	84 (93.3)	
Does anyone in your family have any allergies?				
Yes	6 (13.3)	4 (8.9)	10 (11.1)	0.370
No	39 (86.7)	41 (91.1)	80 (88.9)	
Do you keep pets?				
Yes	1 (2.2)	4 (8.9)	5 (5.6)	0.180
No	44 (97.8)	41 (91.1)	85 (94.4)	

DISCUSSION

Cesarean section is not recommended for both mother and baby health out of indication. In our study, we aimed to examine the relationship between allergy formation and cesarean section in children, and we did not find a significant relationship in our study with a limited number of participants.

Vaginal passage of the baby is important for the growth of beneficial bacteria for our health (Bifidobacteria, Lactobacilli etc.). Accordingly, the baby does not encounter vaginal flora during cesarean section, and therefore the incidence of allergic diseases, especially respiratory allergy, increases. There are also studies showing that the baby is more sensitive to food and airborne allergens and therefore the incidence of allergic rhino conjunctivitis increases as a result of cesarean section (6-9). In our study, no relationship was found between the mode of delivery and the frequency of allergies in the baby, and it is clear that more reliable results will be obtained by increasing the number of participants.

In the study of Düzgün et al. conducted on babies under 6 months of age with a diagnosis of cow's milk protein allergy, it was reported that all babies diagnosed with allergy were born by cesarean section (10). Some studies; suggests that cesarean delivery is associated with subsequent food allergy, particularly in susceptible children. Results need to be validated by others, but can be important in a number of ways. First, they give secondary support to the importance of microbiological stimuli in early life. Second, if the relationship between cesarean delivery and food allergy is confirmed by others, this could be another factor to consider when discussing the mode of delivery (11). Contrary to these studies, no statistical relationship was found in our study.

Turan et al. reported that the rate of smokers during pregnancy was significantly higher in mothers of children diagnosed only with allergic rhinitis (12). In our study, no relationship was found between the presence of allergies in the baby and the mode of delivery, and the excess rate of those who smoked during pregnancy was statistically significant. The reason for this may be due to the limited number of participants.

There is no common opinion in studies investigating the relationship between the presence of animals in the home and allergy formation, and there are studies that have reached various results (6,12,13). Whether exposure to pets during childhood is a risk for sensitivity and allergic symptoms or a protective factor remains controversial (14). In our study, there was no relationship between the presence of animals at home and the presence of allergies or the mode of delivery.

In the literature, there are many studies on the allergy susceptibility of those with light or blond skin color, blue / green eyes, and blond hair color (15-17). In our study, no relationship was found between skin, hair, eye colors and the frequency of allergies, but the results should be increased to a more reliable level by increasing the number of participants.

When the data of the World Health Organization cesarean section rates are examined by considering their income levels; It has been reported as 3.5% at low income level, 18.9% below the middle, 29.9% above the middle and 26.8% at the upper income level (18). Although there is no obligation, routine cesarean section is unethical, as well as bringing serious health problems together and creating a burden on the country's economy by increasing the cost of birth (18,19). Cesarean section can be life-saving for mother and baby in case of medical necessity. However, for most pregnancies, cesarean section carries much more health risks than its advantages for both mother and baby compared to vaginal normal delivery. Maternal mortality rate is higher in cesarean section than vaginal delivery. This ratio increases even more in less developed countries (19,21-23).

CONCLUSION

Due to commercial concerns, it is not recommended to leave the decision of cesarean section to pregnant women for both mother and baby health; No significant difference was found in terms of allergies in our study. However, it is known that the baby does not encounter vaginal flora and therefore misses the first natural immunization opportunity in life. More comprehensive and detailed studies are needed on this subject.

ETHICAL DECLARATIONS

Ethics Committee Approval: The study was obtained from the Non-Interventional Clinical Research Ethics Committee of Hacettepe University (23.06.2020, Decision number: 2020 / 12-24).

Informed Consent: All patients signed the free and informed consent form.

Referee Evaluation Process: Externally peer-reviewed.

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

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Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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