



DERMATOLOGICAL ASPECT OF LABIAL FUSION: A PROSPECTIVE STUDY

Dermatolojik Açıdan Labial Füzyon: Prospektif Çalışma

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Abstract

Aim: Labial fusion is a common condition in prepubertal girls and has several complications. Some dermatological conditions were reported as etiologic factor for this disease. The aim of this study is to evaluate the etiological factors of labial fusion in children through a dermatologic view and to compare the socio-demographic, and environmental data of patients with healthy children.

Materials and Methods: In this cross sectional prospective study, 23 patients with labial fusion and 49 age-sex matched healthy subjects were questioned and examined from dermatological aspect and assessed by a questionnaire

Results: In the control group; 35 % of mothers graduated from university. In children with labial fusion 35% and 26% of mothers graduated from primary school and university, respectively. The atopic family history and history of atopic diseases of patients were higher in labial fusion group when compared with healthy controls. ($p < 0.001$, $p < 0.001$) There were complaints of pre-erythematous lesions with a mean of 1.26 ± 1.32 (median: 1.00) weeks before labial fusion in 60.9% (n:14) of patients with labial fusion. The alcohol based baby wipes usage was higher in group with labial fusion ($p = 0.035$).

Conclusion: Labial fusion can be diagnosed in children of mothers with lower grade education, with family and personal atopic history and diseases, and frequent usage of alcohol based baby wipes. Also erythema in genital area could need follow-up in first month of visit for prevention or early diagnosis of labial fusion.

Keywords: Labial fusion, Baby wipes, Atopic diseases, Etiology

Öz

Amaç: Labial füzyon, prepubertal kızlarda sık görülen bir durumdur ve çeşitli komplikasyonları vardır. Bazı dermatolojik durumlar bu hastalık için etiyolojik faktör olarak bildirilmiştir. Bu çalışmanın amacı çocuklarda labial füzyonun etiyolojik faktörlerini dermatolojik olarak değerlendirmek; sosyodemografik ve çevresel verilerini sağlıklı çocuklarınkilerle karşılaştırmaktır.

Materyal ve Metot: Bu kesitsel prospektif çalışmada, 23 tane labial füzyon olgusu ve 49 tane yaş cinsiyetine uygun sağlıklı denekler dermatolojik açıdan değerlendirildi ve tümüne bir anket uygulandı.

Bulgular: Kontrol grubunda; annelerin %35'i üniversite mezunudur. Labial füzyonlu çocuklarda annelerin %35'i ilkokuldan ve %26'sı üniversiteden mezun bulunmuştur. Atopik aile öyküsü ve hastaların atopic hastalık öyküsü, labial füzyon grubunda sağlıklı kontrollere göre daha yüksekti ($p < 0.001$, $p < 0.001$). Labial füzyon grubundaki olguların %60.9'unda (n:14) ortalama 1.26 ± 1.32 (ortanca: 1.00) hafta öncesinde pre-eritematöz lezyon şikayeti mevcuttu. Alkol bazlı bebek mendillerinin kullanımı labial füzyonlu grupta daha yüksekti ($p = 0.035$).

Sonuç: Annelerin eğitim düzeyi düşük olan; aile ve kişisel atopic öyküleri ve hastalıkları bulunan; alkol bazlı bebek mendilleri sık kullanılan çocuklarda labial füzyon saptanmaktadır. Ayrıca, genital bölgede eritemi olan çocuklar labial füzyonun erken tanısı ve önlenilmesi için muayeneden sonraki ilk bir ay boyunca takip edilmelidir.

Anahtar Kelimeler: Labial füzyon, Bebek mendili, Atopik Hastalıklar, Etiyoloji

INTRODUCTION

Labial fusion or adhesion is a common condition in prepubertal girls, which is reported to be detected in 0,6-5 % in different series¹⁻³. Even though it is asymptomatic in most of the patients, it can be diagnosed after complications such as urogenital infections, hematuria, urgency and urinary incontinence⁴. Recurrence is observed in many of the cases. Prepubertal hypoestrogenism, chronic

irritation, local trauma and infections were described as etiologic factors of the pathology^{5,6}. The estrogen creams can be used in the treatment of the mild cases, but surgical treatment is indicated in severe adhesions, in complete occlusions or in patients with complications.

Some dermatological conditions such as lichen sclerosus, herpes simplex infection and graft versus host disease were also determined to

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be etiologic factor for labial fusion in some patients reported in the literature^{6,7}.

The aim of this study is to evaluate the etiological factors of labial fusion in children through a dermatologic view and to compare the socio-demographic, genetic, environmental and habitual data of patients with healthy children.

MATERIALS and METHODS

This was a cross sectional prospective study. The study was conducted in Departments of Dermatology and Pediatric Surgery of a university hospital. The consecutive patients who admitted to the pediatric surgery outpatient clinic with diagnosis of labial fusion between January 2013 to February 2014 were referred to a dermatologist for evaluation. A detailed questionnaire with personal and family medical history of any dermatological and atopic diseases, symptoms such as edema, erythema and itching before labial fusion, the use or type of medical ointments or hygiene products (diapers, baby wipes, protective creams) and their application frequencies, socio-demographic data were fulfilled. Thorough physical and dermatological examinations were performed in all patients and they were questioned for symptoms such as erythema, itching etc. prior to the diagnosis of labial fusion. Finally; 23 patients with labial fusion (Figure 1) were included to present study. Additionally, 49 age-sex matched healthy subjects were recruited. Both patients and healthy subjects were given informed consent and accepted to be participated into the study. The study protocol was approved by the institutional ethical committee (TNKU 2013.07.01.07). Both patient and healthy control group were examined by the same

dermatologist and assessed by the same questionnaire.

All statistical evaluations were performed using the Statistical Package for the Social Sciences (SPSS) for Windows (version 18.0). Descriptive statistics were calculated (frequency, mean and standard deviation) after performing data control. Chi-Square (χ^2) and Fischer's exact test were used to compare for categorical variables. Mann-Whitney U test was used for non-parametric countable variables. All statistical analyses were performed with a 95% confidence interval (CI) ($p < 0.05$) and evaluated that two-ways.



Figure 1

RESULTS

The mean ages were 25.96 ± 25.50 months, and 29.96 ± 27.98 months and the mean age-based body weight percentile were 56.83 ± 26.88 and 65.20 ± 24.93 in labial fusion group and in healthy control group, respectively. The mean age, and age-based body weight percentile were found to be similar between the groups ($p = 0.42$, $p = 0.19$) (Table 1).

Table 1. The demographic characteristics of the study

	Healthy Control	Labial Fusion	P*
Age (month)	29.96±27.98	25.96±25.50	0.421
Height (cm)	88.29±18.34	83.87±20.93	0.215
Weight (Kg)	13.59±6.76	12.65±7.47	0.228
Weight of birth (gram)	3252.24±522.02	3233.91±557.03	0.374
Body weight percentile	65.20±24.93	56.83±26.88	0.193

* Mann Whitney U

The recurrence of labial fusion was observed in 23.1% of patients. Eleven of these (47.8%) had surgical treatment whereas 14 patients (60.9%) had medical treatment in previous diagnosis. The most frequent medical treatment was estrogen-containing creams (52.2%) and only one patient (4.3%) had more than one surgical treatment.

There were no differences between two groups in regard to socio-demographic data except the education status of mothers. 34.7% of mothers of healthy controls were graduated from university. On the other hand 34.8% of mothers of children with labial fusion were graduated from primary school.

The atopic family history and history of atopic diseases of patients were higher in labial fusion group when compared with healthy controls ($p < 0.001$, $p < 0.001$). There were no difference between two groups according to Fitzpatrick skin type, weight and maturity of birth, duration of breast-feeding and maternal factors during pregnancy.

The environmental factors and atopic history of the patients in both groups are documented in Table 2.

There were complaints of pre-erythematous lesions with a mean of 1.26 ± 1.32 (median:

1.00) weeks before adhesion in 60.9% (n:14) of patients. When products used for hygiene (alcohol based baby wipes or water cleaning), frequency of bath, diaper change per day and cream usage for prevention of diaper dermatitis were compared; only the usage of alcohol based baby wipes were found to be higher in children with labial fusion ($p = 0.035$) (Table 3). The power analysis of patients for both atopia and erythema symptom had been performed.

Table 2. The environmental factors and atopic history of patients

	Healthy Control	Labial Fusion	P*
Living status			
City	31, 63.3	13, 56.5	0.384**
Town	18, 36.7	10, 43.5	
Population of house (people)			
3	23, 46.9	11, 47.8	0.476***
4	23, 46.9	9, 39.1	
5	3, 6.1	2, 8.7	
6	0, 0.0	1, 4.1	
Economical status (per month)	2574.49±1770.95	2404.35±118.86	0.870
Age of mother (mean±SD)	31.00±3.94	31.17±4.13	0.866
Age of father (mean±SD)	34.67±5.05	35.35±4.63	0.576
Family history of atopic disease			
Negative	46, 93.9	10, 43.5	<0.001**
Positive	3, 6.1	13, 56.5	
Patient history of atopic disease			
Negative	47, 95.9	13, 56.5	<0.001**
Positive	2, 4.1	10, 43.5	

*Mann Whitney U, **Fisher's Chi-Square (χ^2), ***Pearson Chi-Square (χ^2)

DISCUSSION

Even though local infection, chronic irritation, and trauma are the most important etiological factors in labial fusion, to our knowledge there is only one study that investigates the relevance of recurrence of labial fusion and these events⁸. According to our search in literature, there is no data comparing labial fusion patients and healthy children in this perspective. On the other hand, hypoestrogenism is another and one of the most frequently researched etiological factor

which is not concluded in literature depending on hypothesis of the epithelial healing in genital area after events mentioned above and considering the influence of estrogen receptors in healing process in epithelium^{5,9}. In this study; the factors that can be easily prevented such as hygiene products that may cause irritation, socio-demographic data and dermatological findings of these patients were researched.

Table 3. The habitual and personal factors of patients

	Healthy Control	Labial Fusion	P*
Fitzpatrick Skin Type			
1	4, 8.2	0, 0.0	0.360
2	40, 81.6	20, 87.0	
3	5, 10.2	3, 13.0	
Birth status			
Mature	47, 95.9	18, 78.3	0.060
Postmature	1, 2.0	2, 8.7	
Premature	1, 2.0	3, 13.0	
Breast feeding			
Negative	7, 14.3	1, 4.3	0.203**
Positive	42, 85.7	22, 95.7	
Cleaning			
Baby wipes (alcohol based)	27, 55.1	19, 82.6	0.035**
Water	22, 44.9	4, 17.4	
Diaper rash prevention cream usage			
Negative	10, 20.4	10, 43.5	0.052**
Positive	39, 79.6	13, 56.5	
Bath(per week)			
1	9, 12.5	5, 6.9	0.095
2	24, 33.3	10, 13.9	
3	13, 18.1	7, 9.7	
4	2, 2.8	1, 1.4	
5	1, 1.4	0, 0.0	

*Chi-Square (χ^2), **Fisher's Exact test

There are case reports that define labial fusion developing after some dermatological diseases. Heriaka et al. described patients with labial fusion after severe HS infection and Norian et al reported an adult patient with labial fusion after genital involvement of graft-versus-host disease^{6,7}. In these reports, responsible etiopathogenesis of labial fusion in patients were defined as re-epithelialisation process for scar. Different than the previous publications, Gibbon et al reported labial fusion as the presenting feature of genital lichen sclerosis in two children¹⁰. They mentioned that inflammation in genital area could result with

this disease and some cases with labial fusion could be misdiagnosed for lichen sclerosis. The most frequent symptom, approximately one week before the diagnosis of labial fusion, was erythema in the presented study. Interestingly, this kind of symptom prior to diagnosis of labial fusion had never been defined in the English literature. This finding suggests that the unknown inflammatory process even for intact epidermis may trigger labial fusion. The cause of this inflammation possibly is the result of habitual behaves or external environmental irritants such as baby wipes.

In the presented study; atopic family history and history of atopic diseases were higher in labial fusion patients. It is well known that; the diapered area of patients with atopic history show increased irritant reactivity to exposure of any external factors^{11,12}. In a study of confirming the safety and cutaneous tolerability of baby wipes in infants with atopic dermatitis, Ehretsmann et al. concluded that the wipes that do not contain irritant ingredients such as alcohol could be used safely in atopic infants¹³.

Acer et al. reported the correlation between recurrence of labial fusion and several factors related with patients, environment and parents⁸. They reported no association between labial fusion recurrence and local hygiene, history of diaper dermatitis. In present study; the usage of alcohol based baby wipes were significantly higher in labial fusion patients. Different than Acer et al, labial fusion patients in this series were compared with healthy volunteers. In literature there are reports that show frequent use of alcohol based baby wipes may cause irritation of genital area¹². This finding supports that the

chronic irritation of genital area may cause labial fusion.

CONCLUSION

The presented study demonstrated that labial fusion can more commonly be diagnosed in children with lower educated mothers; with personal and family history of atopic diseases; with frequent usage of alcohol based baby wipes. Erythema in genital area could indicate a close follow-up for prevention or early diagnosis of labial fusion, which is a disease with several serious complications. The symptom of erythema and further follow-up of patients may alert and lead dermatologists, pediatricist and pediatric surgeons to work collaboratively in prevention of this disease. This finding also may show that further studies with dermatological aspect would guide researchers to etiologic factors of labial fusion.

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