Aşı Öncesi ve Sonrası Dönemde Suçiçeği Olgularının Özellikleri

Characteristics of Chickenpox Cases before and After Vaccination

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ÖZ

GİRİŞ ve AMAÇ: *Suçiçeği, duyarlı bireylerde generalize ekzantematöz döküntü ile karakterize, çocukluk döneminde sık görülen bir klinik tablodur.*

YÖNTEM ve GEREÇLER: *Ülkemizde suçiçeği aşısının çocukluk çağı rutin aşılama takvimine alındığı 2013 yılından önceki ve sonraki dönemlerde gelişen olguların demografik, klinik-laboratuvar özelliklerinin değerlendirilmesi ve kıyaslanması amaçlanmıştır.*

BULGULAR: *: Bu çalışma, Ocak 1994-Nisan 1997 tarihleri arasında Dr. Sami Ulus Çocuk Sağlığı ve Hastalıkları Merkezi'nde tanı alan 502 (1. grup), Ocak 2016-2020 tarihleri arasında Mengücek Gazi Eğitim ve Araştırma Hastanesi'nde tanı alan 170 (2. grup) suçiçeği olgusunun retrospektif incelenmesi ile yapılmıştır.*

TARTIŞMA ve SONUÇ: *İki grupta da hastaların çoğunluğu erkeklerden oluşmaktaydı (%57 vs %54.2). Ortalama yaş birinci grupta 4.4 (±3) iken ikinci grupta 6.8 (±3.6) idi. Ana gruplardaki hastalar yaşlarına göre 0-4, 5-10, 11-15 yaş grubu olmak üzere 3'er alt gruba ayrıldı. Buna göre; birinci ve ikinci gruptaki hastaların çoğunluğunu 0-4 yaş grubu hastalar oluşturmaktaydı. Birinci gruptan 47, ikinci gruptan ise 5 hasta hastaneye yatırılarak izlenmişti. Birinci gruptaki en sık komplikasyonlar alt solunum yolu enfeksiyonu ve deri-yumuşak doku enfeksiyonuydu. İkinci gruptaki en sık komplikasyon ise alt solunum yolu enfeksiyonuydu.*

Sonuç: Bildirilen ve komplikasyon gelişen olgu sayısında aşılama sonrasında anlamlı oranda azalma saptanması, aşı karşıtlığının giderek arttığı bu dönemde ciddi önem arz etmektedir.

Anahtar Kelimeler: *aşı, komplikasyon, suçiçeği*

ABSTRACT

INTRODUCTION: *Chickenpox is a common clinical picture in childhood, characterized by a generalized exanthematous rash in susceptible individuals.*

METHODS: *It was aimed to evaluate and compare the demographic, clinical-laboratory characteristics of cases that developed in our country before and after 2013 when the chickenpox vaccine was included in the routine childhood vaccination calendar.*

RESULTS: *This study was conducted by retrospective examination of 502 chikenpox cases diagnosed at Dr. Sami Ulus Child Health and Diseases Center between January 1994-April 1997 (1st group) and 170 cases at Mengücek Gazi Training and Research Hospital between January 2016-2020 (2nd group).*

DISCUSSION AND CONCLUSION: *Most of the patients were males in both groups (57% vs 54.2%). The mean age was 4.4 (± 3) in the first group and 6.8 (± 3.6) in the second group. The patients in the main groups were divided into 3 subgroups, as 0-4, 5-10, and 11-15 age groups. According to this; most of the patients in the first and second groups were in the 0-4 age group. 47 patients from the first group and 5 patients from the second group were hospitalized. The most common complications in the first group were lower respiratory tract infection and skin-soft tissue infection and in the second group was lower respiratory tract infection.*

Conclusion: The significant decrease in the number of reported cases and complications after vaccination is really important in this period of anti-vaccination thoughts are gradually increasing.

Keywords: *chickenpox, complication, vaccination*

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INTRODUCTION

Varicella-zoster virus (VZV) is one of the Herpes viruses known to cause human infection and distributed worldwide. VZV infection causes two clinically different diseases: chickenpox and herpes zoster (shingles). Chickenpox occurs when susceptible individuals encounter VZV. It is a worldwide, highly contagious, benign infectious disease characterized by a generalized exanthematous rash in children with generally normal immunology (1, 2). Virus spread is primarily respiratory; the virus replicates in the nasopharynx and respiratory tract (3). Although the target organ of the virus is the skin, it has been reported that many organ involvement findings have been found in children and adults who died because of chickenpox. Primary chickenpox infection in children has been associated with an increased incidence of invasive Group A Streptococcal soft tissue infections. Infectious complications include cellulitis, myositis, necrotizing fasciitis and toxic shock syndrome (4-9). Encephalitis and Reye's syndrome are the most serious complications of VZV infection, although they are rare (10). Other less common neurological complications include transient focal deficits, aseptic meningitis, transverse myelitis, vasculitis, and hemiplegia (11). In some studies, encephalitis, which is one of the serious complications associated with chickenpox, accounted for 20 percent of chickenpox-related hospitalizations (12).

Chickenpox is a common childhood infection. It occurs equally in both gender and infection does not discriminate between races. The disease usually occurs seasonally and epidemically. It is usually seen in late winter and early spring (13). VZV is highly contagious and can be transmitted from patients with chickenpox or shingles. Secondary attack rate is over 90% in susceptible people in the same home (11, 14). The average incubation period is 14 to 16 days, but this range can differ from 10 to 21 days. The first finding is often mild fever with the lesions that occur on the scalp or trunk. The lesions begin as macules that rapidly become papules, followed by characteristic vesicles; these lesions then become pustular and subsequently crusty papule formation can be observed (15). Later, these lesions spread to the whole body by a centrifugal distribution (13). Generally, serious systemic findings do not accompany the disease. Fatigue, fever, anorexia, headache and sore throat often develop in healthy children (16). Progressive varicella, which is a more severe form of disease, may develop in some patients, especially those with immunodeficiency (17). Patients with rheumatologic diseases, especially those treated with tumor necrosis factor antagonists, are at increased risk for more severe primary varicella infection compared to the general population (18).
In our study, we aimed to evaluate and compare the rates of complications together with the demographic, clinical and laboratory characteristics of the cases that developed before and after 2013 when the chickenpox vaccine was included in the routine childhood vaccination calendar in our country.

MATERIAL AND METHOD

This study was conducted by retrospective examination of 502 chikenpox cases diagnosed at Dr. Sami Ulus Child Health and Diseases Center between January 1994-April 1997 (1st group) and 170 cases at Mengücek Gazi Training and Research Hospital between January 2016-2020 (2nd group). The diagnosis of chickenpox was made based on the history, physical examination, and characteristics of the rash. Patients with rashes on the palms and soles were not included in the study. 47 of the patients in the first group and 5 of the patients in the second group were hospitalized. All other patients were followed up ambulatory. Nineteen of the 47 patients in the first group were hospitalized in the oncology service and other services and were diagnosed with chickenpox while being treated with another diagnosis. The remaining 28 patients and all patients in the second group had no other disease and were hospitalized from the polyclinic due to varicella complications. A complete physical examination, hemogram, peripheral blood smear, liver and kidney function tests, urine analysis, chest radiography, telecardiography, electrocardiography, throat culture, blood culture, and urine culture examinations were performed in hospitalized patients in terms of complications. In addition, electroencephalography was performed in patients hospitalized with central nervous system complications. All patients hospitalized due to their

complications were given treatment for the complications and all were discharged with full recovery except one patient. In the second group, 1 patient followed up with meningoencephalitis complication was referred to the advanced center.

FINDINGS

Of the 502 patients in the first group, 218 (43%) were female and 284 (57%) were male. The ages of the patients were between 2 months and 15 years; Mean age was 4.4 (± 3) years. The patients were gathered in 3 groups as 0-4, 5-10, 11-15 age groups. According to this, patients in the 0-4 age group constituted 56% of all patients. 152 of these patients (54%) were male and 129 (46%) were female. Patients in the 5-10 age group constituted 39% of all patients. 115 of them were male (59%) and 79 of them were female (41%). Patients in the 11-14 age group constituted 5% of all patients. 17 (63%) of them were male and 10 (37%) were female. Of the 170 patients in the second group, 78 (45.8%) were female and 92 (54.2%) were male. The ages of the patients were between 2 months and 15 years; mean age was 6.8 (± 3.6) years. The patients were gathered in 3 groups as 0-4, 5-10, 11-15 age groups. According to this, patients in the 0-4 age group constituted 16.4% of all patients. 16 (57%) of these patients were male and 12 (43%) were female. Patients in the 5-10 age group constituted 69.4% of all patients. 60 of them were male (50.8%), 58 were female (49.2%). Patients in the 11-15 age group constituted 14.2% of all patients. 15 of them (62.5%) were male and 9 (37.5%) were female. The distribution of the patients in the groups according to gender and age is given in Table 1.

Table 1. Distribution of the patients in groups according to gender and age

Age	Number of Female/Male Patients in 1st Group	Number of Female/Male Patients in 1st Group	Total Number of Female/Male Patients in Both Groups
0-4	129/152	12/16	281/28
5-10	79/115	58/60	194/118
11-15	10/17	9/15	27/24
0-15	218/284	79/91	502/170

The distribution of the number of patients applying by seasons is shown in Table 2. In both groups, patients most frequently presented to the hospital in winter and spring months. According to this; in the 1st and 2nd groups, 324 (64.5%) and 151 (88.8%) of the patients applied in the winter and spring months, respectively; 178 (35.5%) and 19 (11.2%) of them applied in the autumn and summer months, respectively.

Table 2. Distribution of the number of patients applying by seasons

Seasons	Groups	
	1st Group	**2nd Group**
Spring	139	66
Summer	90	17
Autumn	88	2
Winter	185	85

47 patients from the first group and 5 patients from the second group were hospitalized. Nineteen of the patients in the first group were diagnosed with chickenpox infection while being followed up for an underlying disease. When these patients were excluded, 28 (5.8%) of 483 patients who applied from the polyclinic were hospitalized due to complications. 21 of the patients hospitalized due to complications were in the 0-4 age group and 7 were in the 5-10 age group. There wasn't any hospitalized patient due to complications in the 11-15 age group. In the second group, all 5 patients (2.9%) were hospitalized due to complications. Two of them were in the 0-4 age, 2 in the 5-10 age, and 1 in the 11-14 age group.

In the first group, 10 (36%) of the patients hospitalized due to complications were hospitalized because of lower respiratory tract infection. The average length of stay of the patients was 8.7 ± 3.8 days, and the mean age was 3.1 ± 1.7 years. Ten of the patients were hospitalized due to skin and soft tissue complications (36%). The mean hospitalization period in this group was 6.3 ± 2.8 days, and the mean age was 1.9 ± 0.8 years. Five of the patients (18%) were hospitalized due to central nervous system complications. The mean hospitalization period of these patients was 11.5 ± 2.4 days, and their mean age was 5.7 ± 3.4 years. In the second group, 3 (60%) of the patients hospitalized due to complications were hospitalized

because of lower respiratory tract infection. The average length of stay of the patients was 8.4 (± 7.4) days, and the mean age was 5.4 (± 3.8). One of the patients (20%) was hospitalized due to central nervous system complications. This patient was transferred to the advanced center after being hospitalized for 3 days. One of the patients (20%) also presented with acute abdomen and was diagnosed with acute perforated appendicitis. Acyclovir intravenous treatment was initiated as 30 mg/kg/24 hours and given in 3 doses to all patients. Table 3 shows the number of patients hospitalized due to complications.

Table 3. Number of the patients hospitalized due to complications

Complications	Groups	
	1st Group	2nd Group
Lower respiratory tract infection	10	3
Skin-soft tissue infection	10	1
Central nervous system infection	5	1

DISCUSSION

Chickenpox is traditionally a benign disease of childhood. However, it can cause complications in healthy children, and it may cause death, albeit rarely (1). It has been reported that chickenpox infection can be widespread, progressive and fatal in immunocompromised patients, and liver involvement is more common with pneumonia (19, 20, 15). Although the vast majority of cases of chickenpox are seen in children under 3 years of age, many studies have also been reported in the school age and pre-school period (19, 21, 22). In our study, although 56% of the chickenpox cases in the first group was constituted by the 0-4 age group; in the second group, 69% is constituted by 5-10 age group. When the 5-10 age group in the second group is evaluated, it is seen that the majority of the patients are in the preschool period. These findings are consistent with the literature.

Although chickenpox is generally endemic, it may cause epidemics in winter and early spring seasonally (1, 19, 21-24). In our study, it was determined that the majority of the patients (64.5% and 88.8%) in both groups applied in the winter and spring months. These rates are in line with the information in the literature.

Complications related to chickenpox infection are often observed at earlier ages. In a study conducted in Zeynep Kamil hospital, 35 (89.7%) of 39 cases hospitalized due to varicella complications consisted of children under the age of five (22). Similar findings were also found in various studies (25-27). In our study, in the 1st and 2nd groups, 21 (71%) and 2 (40%) of the patients developed complications due to varicella infection were under the age of 5, respectively.

The types of complications seen in patients may vary. In our study, pneumonia and soft tissue infections were prominent in the pre-vaccination period, while pneumonia was in the first place in the post-vaccination period. In two studies conducted in Zeynep Kamil and İzmir Tepecik Training and Research Hospital in our country, the most common complication was pneumonia (43.6% and 33.7%) (22, 27). In the Romanian study where chickenpox vaccination was not included in the routine pediatric vaccination schedule, pneumonia was again in the first place with 46% (25). In the study reflecting the pre-vaccination period in Germany and Italy, the number of neurological complications (56% and 38.3%) was higher (24, 28). Soft tissue infections (40%) were prominent in Belgium (26).

In the literature, the rate of hospitalization due to complications varies (22, 24-28). In a study conducted in our country, this rate was 5.8% (22). In our study, it was 5.8% in the first group and 2.8% in the second group. In a large retrospective study conducted in Romania, a country where the vaccine was not included in the routine pediatric vaccination schedule, it was 74.2% (25). In another study examining the cases before the vaccination period in Italy, this rate was 74.8% (28). In a study evaluating the pre-vaccination and post-vaccination period in Germany, it was found that there was a 63% decrease in the number of cases reported after vaccination and an 81% decrease in the number of complications (24). According to another study of the clinical and epidemiological features of chickenpox disease in populations with increased vaccine coverage between 1997 and 2005: In vaccinated children aged 1 to 14 years, chickenpox was milder and modified (i.e. less fever and less number of lesions); it was found that the accompanying rash was significantly more likely to be atypical; the probability of complications had

been found to be lower among vaccinated children than unvaccinated and neurological complications (eg encephalitis) remain rare (10, 29, 30). Compared to the pre-vaccine studies in the United States of America (USA), the rate in the first group is high (31, 32). The reason for this can be explained by the low socioeconomic levels of the families and the lack of hygienic conditions. In addition, since the hospital in which the study of this group conducted was the only pediatric hospital affiliated to the Ministry of Health at the region, referral of complicated varicella cases to this hospital could have caused this rate to increase. In addition, the low complication rate in the second group can be considered as a direct effect of the vaccine despite the low number of patients.

In a study conducted in the USA, 7 deaths were reported out of 427 children who had developed complications due to chickenpox. One of the exitus' was due to streptococcal toxic shock syndrome in a previously healthy child, while the other 6 were immunodeficient children (33). In a study conducted in Belgium, mortality was found as 0.5/106 (26). While it was 0.4% in the pre-vaccine study in Italy. Two patients died in Germany, but the fate of 94 patients is unknown (24, 28). Exitus was not observed in the pediatric population in the Romanian study and in various studies conducted in our country (22, 25, 27). In our study, no exitus was detected before and after vaccination. It will not be correct to compare with other studies due to the low number of patients; however, it is pleasing that there is no death.

As a result, chickenpox is a benign disease of childhood. However, in some cases, it may cause complications and may be fatal. The significant decrease in the number of reported cases and complications after vaccination is really important in this period which anti-vaccination thoughts are gradually increasing.

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