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Trigger Factors in Childhood Psoriasis and Vitiligo

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A B S T R A C T

Psoriasis and vitiligo are very common skin disorders that may have a profound impact upon the affected individuals; the etiology of both diseases includes genetic factors and triggers, which could be endogenous or exogenous. Two groups of children population consisting of 153 patients suffering from skin disorder (65 with vitiligo and 88 with psoriasis) have been examined at the Department of Dermatovenerology, University Hospital Osijek, during three years period. Basic methods of data collection were: questionnaire, clinically examination and histological proven diagnosis. The aim of this investigation were to determine the most common triggers, which play a role at onset of disease among young patients with vitiligo and psoriasis, and to establish familial distribution among both groups of patients. The results of investigations showed that the onset of vitiligo was mostly connected with psychological factors (56.9%), but the most frequently trigger in childhood psoriasis was inflammatory focus (38.6%). According to morphologic patterns the authors separated two groups of patients among psoriatics: group I with plaque psoriasis, which pointed the inflammatory focus and physical trauma as trigger before onset of disease (each 25.0%) and group II with psoriasis guttata and inflammatory focus as trigger at even 62.5% cases. Familial distribution among psoriatic children was 55.6%, and among children with vitiligo only 16.9%. Ours children patients showed significantly disparity in structure of triggers according diagnosis and gender distributions and about familial occurrence. Also some difference has been established according to age of onset between psoriasis and vitiligo at early childhood.

Key words: *psoriasis, vitiligo, childhood, triggers, familial distribution*

Introduction

The skin is important to self-image and sense of well being, and is an important contributor to social reputation. In different cultures those with a disordered skin may experience a sense of shame and guilt, and anticipate the threat of so-

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cial rejection. Psoriasis and vitiligo are skin disorders, which may have a profound impact upon the affected individuals.

Prevalence of psoriasis in Europe is about 2%[1–4]. According to the epidemiological data it is estimated that 15% of psoriatic patients developed disease before age of 10[5]. Farber and Nall noticed during their study that the 35% of investigated patients developed disease before 20 years of age[6]. Some authors proposed that there are two types of psoriasis vulgaris: one with an early and one with a late age of onset[7,8]. The cause of psoriasis remain elusive, there are many factors that predispose a patient to disease. Included are genetic factors, endogenous factors and a variety of exogenous triggers such as trauma, infection, stress. Most young patients with their first phenotypic expression of psoriasis experience have had an antecedent streptococcal throat infection. Often in children the initial clinical expression is psoriasis guttata[9–17]. Some authors blame streptococcal superantigens which cross-react with keratin[18].

Prevalence of vitiligo is 1–2% among whites, but it is much higher among blacks[19–21]. The skin depigmentations usually start in childhood or young adult person[19]. Etiology of vitiligo is unknown and a number of opposed hypotheses still coexist. Inspite of the data about 30% familial occurrences, exact inheritance is unclear but it seems that vitiligo also needs a »trigger« to develop clinical features[22,23]. Trigger factors for vitiligo could be: severe sunburn, trauma, infections and emotional stress. The group of authors from Netherlands has been formulated a very interesting convergence theory for vitiligo. This theory starts that stress, accumulations of toxic compounds, infection, autoimmunity, mutations, altered cellular environment and impaired melanocyte migration and/or proliferation can all contribute to vitiligo ethiopathogenesis in varying proportions[24].

Because of their similarity in ethiopathogenesis, prevalence, course, prognosis and sense of psychologically distress, the authors tried to establish which of triggers plays a role in onset of both diseases among children.

Patients and Methods

The research was carried out during a three-year-period (January 1999 to December 2001) at the Department of Dermatovenerology, Clinical Hospital Osijek. 153 children patients were studied (65 with vitiligo and 88 psoriatics). The main criteria for including in research were clinical feature with histologically proven diagnosis of vitiligo and/or psoriasis; and the age from 0 to 15 years.

All children patients were clinically examined and complete anamnesis was taken. Basic method of data collection was questionnaire. The questionnaire contained: general data (year of birth, gender, year of disease onset), familial distribution, clinical feature (particularly morphologic pattern of psoriasis: plaque psoriasis, and psoriasis guttata) and triggers.

All children patients were divided according to gender (male/female); according to age of onset (0–5 years, 6–10 years and 11–15 years); according to triggers (inflammatory focus, psychological factors, physical trauma, other triggers and unknown factors); and according to distribution to gender and triggers. Also, children with psoriasis have been divided according to morphological pattern in two groups (group I: plaque psoriasis, and group II: psoriasis guttata). Triggers included: psychological factors which could be »acute« and act only once (like death of one parent, friend; birth of a new child in family; changing the place of living or school) and the onset of skin disorders

takes place one or two months after that. On the other hand, »chronic« psychological factors take effect over long time (long lasting), almost one or two years before the onset of the first manifestation of disease. Such triggers are: alcohol abuse in family, long standing disharmony in family or at school, parents divorce, problems with love, war events in the region, refugee status.

Other triggers are, as follows: inflammatory focus (tonsillitis, sinusitis, sore throat, nephritis, otitis); physical trauma or injury (scratch, self-inflicted cut, wound after the fall or surgery procedures); and other triggers (other diseases, fevers etc.).

Since the data is categorized, in order to analyze the homogeneity of the sample as well as to determine the possible dependence between variables, the χ^2-test was used in cases when it was suitable. On the other hand, the Fisher exact test was used in cases which were not adequate for the use of the χ^2-test.

Results

Among 153 children patients 65 of them were with vitiligo (male 29; 44.6% and female 36; 55.4%) and 88 with psoriasis (male 32; 36.4% and female 56; 63.6%). The familial distribution among vitiligo patients was 16.9% and among psoriatics 55.6%.

Among children with vitiligo, the distribution of patients according to gender and age of onset was: 55.4% (male 27.7%: female 27.7%), in group of patients between 11 and 15 years; 40.0% (male 15.4%: female 24.6%), in group between 6 and 10 years, and 4.6% (male 1.5%: female 3.1%) in group from 0 to 5 years of age (Figure 1). Among children with psoriasis, the distribution according to gender and age of onset was: 52.3% (male 20.5%: female 31.8%) in group from 11–15 years; 31.8% (male 9.1%: female 22.7%) in group from 6–10 years and 15.9% (male 6.8%: female 9.1%) in group from 0–5 years of age (Figure 2).The most frequent triggers in children patients with vitiligo were psychological factors (56.9%) and inflammatory focus (30.8%) and less often physical trauma (9.2%) and other triggers (3.1%), none of the patients has mentioned »the unknown factors«. Among children patients with psoriasis the most frequent triggers were inflammatory focus (38.6%) and physical trauma (20.5%), followed by unknown factors (15.9%), other triggers (13.6%) and psychological factors (11.4%) (Table 1). The χ^2-test was used in order to determine the existence of statistically

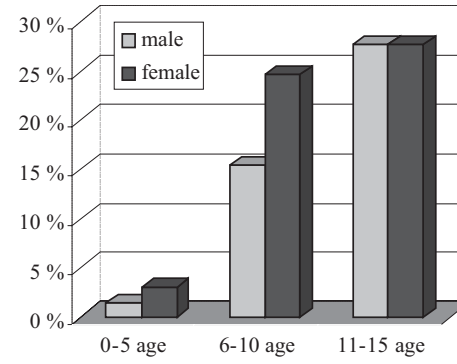

Fig. 1. Distribution of vitiligo patients according to gender and age.

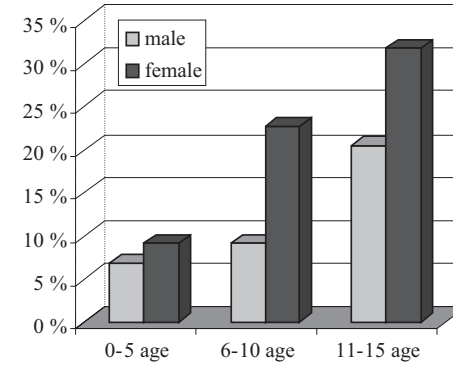

Fig. 2. Distribution of psoriasis patients according to gender and age.

TABLE 1
TRIGGERS IN CHILDREN PATIENTS WITH VITILIGO AND PSORIASIS

Trigger	Vitiligo		Psoriasis	
Inflamatory focus	20	30.8%	34	38.6%
Psychological factors	37	56.9%	10	11.4%
Physical trauma	6	9.2%	18	20.5%
Other triggers	2	3.1%	12	13.6%
Unknown factors	0	0.0%	14	15.9%
Total	65	100.0%	88	100.0%

TABLE 2
TRIGGERS AMONG PATIENTS WITH PLAQUE PSORIASIS (GROUP I) AND PSORIASIS GUTTATA (GROUP II)

Trigger	Group I		Group II	
Inflamatory focus	14	25.0%	20	62.5%
Psychological factors	8	14.3%	2	6.3%
Physical trauma	14	25.0%	4	12.5%
Other triggers	6	10.7%	6	18.7%
Unknown factors	14	25.0%	0	0.0%
Total	56	100.0%	32	100.0%

significant difference in distribution of triggers for vitiligo and psoriasis, and it confirmed the existence of difference on the level of significance 0.05, since the obtained p value was p=0.0001.

Among children patients with psoriasis, the most frequent triggers in plaque psoriasis (group I) were physical trauma, inflammatory focus and unknown factors (25.0% each), followed by psychological factors (14.3%) and other triggers (10.7%). Among children with psoriasis guttata (group II), the most frequent triggers were inflammatory focus (62.5%), then other triggers (18.7%) which were followed by physical trauma (12.5%) and psychological factors (6.3%) (Table 2). The χ^2-test confirmed the existence of difference in distribution of triggers for group I and group II on the level of significance 0.05 (p=0.0008).

According to gender and triggers among children patients with vitiligo, the most frequent triggers in male patients were psychological factors (24.6%) followed by inflammatory focus (12.3%) and physical trauma (7.7%) but there weren't any other triggers. In female patients the most frequent triggers were psychological factors (32.3%) and inflammatory focus (18.5%), followed by other triggers (3.1%) and physical trauma (1.5%) (Table 3). Since the expected sample frequencies were not adequate for the use of χ^2-test, which does not discard the homogeneity of the sample in correspondence to female and male patients, other tests have been conducted. Moreover, the Fisher exact test also does not discard the hypothesis about the independence of gender and triggers on the level of significance 0.005. That means that one should support the the-

TABLE 3
DISTRIBUTION OF VITILIGO PATIENTS (N, %) ACCORDING TO GENDER AND TRIGGERS

Trigger	Female		Male		Total	
Inflamatory focus	12	18.5%	8	12.3%	20	30.8%
Psychological factors	21	32.3%	16	24.6%	37	56.9%
Physical trauma	1	1.5%	5	7.7%	6	9.2%
Other triggers	2	3.1%	0	0.0%	2	3.1%
Total	36	55.4%	29	44.6%	65	100.0%

TABLE 4
DISTRIBUTION OF PSORIATICS (N, %) ACCORDING TO GENDER AND TRIGGERS

Trigger	Female		Male		Total	
Inflamatory focus	26	29.5%	8	9.1%	34	38.6%
Psychological factors	6	6.8%	4	4.6%	10	11.4%
Physical trauma	6	6.8%	12	13.7%	18	20.5%
Other triggers	10	11.4%	2	2.2%	12	13.6%
Unknown factors	8	9.1%	6	6.8%	14	15.9%
Total	56	63.6%	32	36.4%	88	100.0%

sis, which states that the distribution of the triggers in vitiligo does not depend on the gender of the patients.

Among psoriatics according to gender and triggers, the most frequent triggers in male patients were physical trauma (13.7%), inflammatory focus (9.1%), unknown factors (6.8%), psychological factors (4.6%) and other triggers (2.2%). In female patients the most frequent triggers were inflammatory focus (29.5%), other triggers (11.4%), unknown factors (9.1%) followed by psychological factors and physical trauma (both 6.8%) (Table 4). χ^2-test confirmed the existence of the difference in distribution of triggers for male and female psoriatics on the level of significance 0.05 (p=0.02).

The time between the act of the trigger and the onset of the disease is different for different triggers. The time between inflammatory focus, infections, physical injury and »acute« psychological triggers and the onset of skin disorders has been established about two weeks, to one or two months in all cases of vitiligo and psoriasis. On contrary, »chronic« psychological triggers have provoked the onset of diseases after a long period of time, which could be one or two years.

Discussion

Psoriasis is an important childhood disorder. Whereas pustular psoriasis and psoriatic arthropathy are rare in this group of patients, plaque and guttata psoriasis are the most common type in childhood[1,3,5,7,8,17,25]. In our study among 88 cases of psoriatic children, the most common form of disease found was plaque (63.6%), followed by guttata (36.4%), with prevalence of female psoriatics according to gender. In study of Nyfors and Lemholt among 245 children suffering from

psoriasis 64% were girls[13]. Asboe-Hansen noticed 2/3 of all hospitalized children with psoriasis are girls and only 1/3 boys[35]. In Kuwait survey girls outnumbered boys by ratio of 1.5:1[17].

A positive family history in our study was obtained in 55.6% cases. Nanda noticed 9.8%, Al Fouzan 28%, while Morris et al described even 71% children with positive family history[8,17,25]. According to Chistophers the familial distribution is much higher among type I psoriasis with early onset and HLA Cw6[7]. The strong association between psoriasis guttata and high frequency in family history is also documented[10].

Inflammatory focus (vs. infection) was the most common triggering factor among our children, occurring in 38.6% of cases: 25% in group I with chronic plaque psoriasis, and even 62.5% in group II with psoriasis gutatta. The main infection was streptococcal with positive ASO in 20 (22.7%) patients: tonsillitis, sinusitis, sore throat and otitis media; staphylococcus infection in 6 (6.8%); uroinfection with Escherichia coli in 5 (5.7%) patients; and herpes zoster infection in one (1.4%) patient, which preceded 2–6 weeks before onset of disease. At the beginning of the 20-century, one of the main theories about the cause of psoriasis was infection[26]. Infection, especially streptococcal one as a precipitating factor was commoner in young people and usually resulted in psoriasis guttata[9–18,25–33]. Recent reports demonstrated that previous streptococcal, staphylococcal, or viral induced infections can play a role in the pathogenesis of guttata and some cases of plaque psoriasis, possibly by the production of super antigens[9,18,27,30,34,35].

Physical trauma as the trigger before onset of disease has been noticed among 20.5% children, especially among children with plaque psoriasis (25.0% plaque: 12.5% guttata), which is statistically significant. Distribution according to gender was also statistically significant (M= 13.7%: F=6.8%). Other literature data, like Farber and Nall, described physical injury as a direct »trigger« among 12% of 4468 psoriatics, and among 43% in one other study of 200 patients[2]. Braun-Falco confirmed an isomorphic Köbner reaction after trauma in even 76% of their psoriatics[36].

Stressful life events, »acute« or »chronic«, have been reported in many studies as one potent etiological trigger for inducing or exacerbating psoriasis in adults (32% to 88% patients)[10,26,37–40]. Among our 88 psoriatic children, psychological factors as onset of disease, has been established in only 11.4%; 14.3% in plaque and 6.3% in guttata psoriasis, which is statistically significant difference according to clinical features. But, the statistically significant difference between male (4.6%) and female (6.8%) children has not been found.

Trigger factors for vitiligo abound. In our study, which was based on 65 patients, the main trigger was psychological factors in even 56.9% patients. The trigger difference between male and female was not statistically significant (M=24.6%: F=32.3%). Stressful life events were »acute« triggers in 15.9% (death of one parent, changing place of living, birth of a new child in family) and »chronic« in 41.0% children with vitiligo. The most frequent »chronic« triggers were: long standing disharmony in family 10.2%; alcohol abuse in family 11.2%; disharmony at school 6.6%; refugee status 4.1%; war events 3.9%; parents divorce 3.2% and problem with love 1.8%. In study of Salzer and Schallreuter the most striking triggers associated with the onset of vitiligo in adults were: loss or separation of closely connected person in 30% of 117 patients; stress at work was associated in 17.5% and divorce in 15%. They also suggest a possible link between catecholamine-based stress and a genetic susceptibility to

the onset/progression of the depigmentation disorder[41].

The following trigger was inflammatory focus (vs. infection) for instance: acute infection of throat, sinusitis, otitis, small pox, dental problems, etc., which was considered a main potential risk factor two or tree decades ago. Physical trauma takes a very important place in male children, as well as in male children with psoriasis. It is presumed that the reason for such result is boys' behavior pattern as well as the way of their playing in childhood (the choice of sports, fighting/rows, falling), and for those reason boys are more exposed to physical injuries.

Positive family history was present in 16.9% of our children patients. We don't find similar data about children with vitiligo, but vitiligo in adults shows various results according to positive family history: from 11.5%[42], 19%[23], 29%[33] and finally even 34%[43].

The sites of onset were face, hands, legs and trunk. The most frequent clinical feature was vitiligo vulgaris in 54 (83.1%) followed by focal vitiligo in 7 (10.7%) and segmental vitiligo in 4 (6.15%) patients. Other diseases associated with vitiligo were psoriasis in 2 (3.1%) patients, atopic (nummular) eczema in 5 (7.7%), diabetes mellitus in 1 (1.5%), alopecia areata in 2 (3.1%) patients. Thyroid disease has not been noticed in children in our study.

The data about the age of onset among psoriasis and vitiligo patients showed statistically significant difference only in group from 0–5 years: 15.9% children with psoriasis got ill, on contrary 4.6% children got ill with vitiligo. Psoriasis, like vitiligo has a peak around puberty and the difference in the gender ratio between these two disorders in the 11–15 age groups is not statistically significant. According to the results obtained from our study, it is clear that there is a significant difference among the triggers of both diseases. Whereas in past the infection was considered the main trigger of both diseases, in course of time it has been established that in children suffering from vitiligo numerous stressful situations in childhood play more important role and take the first place among the triggers of this population. In adult patients, along with the psychic disorders, many autoimmune diseases very often follow the skin alternations.

On contrary, in adult psoriatics, as previously mentioned, the psychic stress is the most frequent trigger in manifestation of the disease, as well as in its exacerbation. Although the examined patients sample in our study is not large enough to draw definite conclusions, nevertheless, our results follow the results of the significant referential studies.

At the end we would like to conclude: although psoriasis and vitiligo have different ethiopathogenesis in some aspects, they also have many similarities; such as: genetic predisposition, triggers for inducing the onset of disease, physical condition before onset of illness and finally, consequences of disorders such as depression, loss of self-esteem, loss of quality of life, job discrimination and many other emotional disturbances.

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»TRIGGER« FAKTORI KOD PSORIJAZE I VITILIGA U DJEČJOJ DOBI

S A Ž E T A K

Psorijaza i vitiligo su vrlo česte kožne bolesti koje imaju znatnog utjecaja na kvalitetu života oboljele osobe; osim genetske predispozicije, za nastanak bolesti bitni su i »trigger« faktori ili tzv. okidači koji mogu biti endogeni i egzogeni. Na odjelu za Kožne i spolne bolesti Kliničke bolnice Osijek u periodu od 3 godine pregledana su 153 boles-

nika dječje dobi, koji su bolovali od psorijaze i vitiliga. Cilj istraživanja je bio utvrditi: 1) najčešće okidače odgovorne za prvu pojavu psorijaze i vitiliga u dječjoj dobi; 2) razlike među pojedinim skupinama definiranim prema: a) dijagnozi, b) dobi nastanka, c) spolu; 3) obiteljsku učestalost u obje bolesti. Osnovna metoda prikupljanja podataka je bio upitnik, klinički pregled i histopatološka potvrda dijagnoze. Rezultati su pokazali da je pojava vitiliga najčešće povezana sa psihičkim stresom, u čak 56.9%; dok je u djece sa psorijazom okidač bolesti u 38.6% slučajeva bilo upalno žarište i to u kronične plaque psorijaze u 25.0% slučajeva, identično kao i fizikalna trauma, dok je u grupi djece sa psoriasis guttata taj postotak čak 62.5%. Iz rezultata je vidljivo da ispitane skupine pokazuju značajnu razliku u strukturi okidača prema dijagnozi i spolu. Analizom dobi nastanka obiju bolesti uočena je razlika samo u grupi ispitanika od 0–5 godina života, gdje je nastanak psorijaze znatno češći nego nastanak vitiliga. Obiteljska učestalost također pokazuje značajnu razliku: za psorijazu iznosi 55.6%, a za vitiligo 16.9%.