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Epidemiological evaluation of paediatric psoriasis patients at the Dermatology Department

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ABSTRACT

Introduction: Psoriasis is a chronic autoinflammatory disease, which mostly affects skin and joints. Patients with psoriasis are at risk of developing comorbidities such as diabetes, cardiovascular diseases or mental disorders. It is reported that even one-third of the total psoriatic cases may have skin symptoms in childhood.

Material and methods: The study aimed to perform a retrospective analysis of paediatric patients with psoriasis admitted to the dermatological department between 2018 and 2020. Patients' data were analysed for age, gender, medical diagnosis (ICD-10) including subtypes of psoriasis, treatment, the clinical course of the disease and results of the diagnostic tests including cholesterol fractions and blood glucose level.

Results: In the years 2018–2020 73 children were admitted to the dermatological department. The number of female patients 47 (64.38%) significantly dominated over the number of male patients 26 (35.62%). Almost 95% of them were diagnosed with psoriasis vulgaris. Only 3 cases (4.11%) of generalized pustular psoriasis and 1 case (1.37%) of psoriatic arthritis were reported. Almost 20% of children had a positive family history of psoriasis. Readmission to the ward was required in 35.62% of the cases. 23.4% of patients presented abnormality in lipid profile. 15% had various comorbidities.

Conclusions: Better understanding of psoriasis and its management from an early age, may improve the quality of life of psoriasis patients and prevent them from developing serious comorbidities in the future.

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Key words: psoriasis, paediatric psoriasis, comorbidities

INTRODUCTION

Psoriasis is a chronic autoinflammatory disease that mainly impacts the skin, joints and nails and affects about 1–3% worldwide population [1]. One–third of all the cases have an early onset of symptoms and mainly occur between 7 and 11 years of age [2, 3]. Moreover, psoriasis is reported to be one of the most common chronic skin diseases in the children population whose prevalence might reach 12–15% of all paediatric dermatoses [4, 5]. Some studies also present a small predominance of disease in girls in comparison to boys, as well as an earlier onset of the first symptoms in the female group [4]. The early age of the patients' first symptoms is associated with a high family burden and higher severity of the disease [6].

Although this condition primarily affects the skin, it is often associated with serious comorbidities, which may develop during disease [7, 8]. Among the most frequent ones are psoriatic arthritis, hypertension, diabetes mellitus, obesity as well as cardiovascular and psychiatric disorders. Additionally, the beginning of the disease in childhood may increase the possibility of developing mentioned disorders. Studies have shown that the occurrence of comorbidities in individuals younger than 20 with psoriasis (14.4%) is twice as many as in the peers without psoriasis (7.2%) [9]. Awareness and early recognition of extracutaneous associations are essential for immediate doctor's intervention to improve patients' health and their mental state [10]. Interdisciplinary care is demanded especially in the paediatric psoriatic population to minimize the risk of developing severe comorbidities by an early assessment and treatment of established extracutaneous psoriatic manifestations and comorbidities [11].

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Despite psoriasis being commonly seen among children, the data about epidemiology and management of paediatric psoriasis are quite limited in comparison to data about this condition in adult patients [12, 13]. Physicians and paediatric patients face unique challenges connected with insufficient evidence-based medicine data and reduced possibilities of treatment. When the number of available therapies in adults rises, the relatively limited number of drugs that are approved to treat children leads to off-label use of older and less effective medications [13]. Paediatric patients often require treatment till adulthood, which extends the time of therapy and accordingly increases the cumulative risk of used drugs adverse effects. Furthermore, the insufficiency of guidelines of a therapeutic approach to moderate to severe psoriasis in children seems to be the most alarming. Insufficient treatment can lead to a substantial reduction of the quality of life leading to mental disorders. The use of older and less effective drugs in those cases might lead to inadequate response to the therapy and persistence of skin lesions. As it is widely known that may lower the quality of children's lives and affect their mental health.

This study aimed to describe epidemiological characteristic features of paediatric patients diagnosed with psoriasis hospitalized in the Paediatric Ward of the Department of Dermatology, in the period from 2018 to 2020.

MATERIAL AND METHODS

We conducted a retrospective cross-sectional study of the paediatric patients admitted to the Paediatric Ward of the Department of Dermatology in the period between January 2018 and December 2020. The study group comprised 73 paediatric patients. Inclusion criteria contained diagnosis with ICD (International Classification of Diseases) L40 code for diverse types of psoriasis and age below 18 years old. Data were collected by the review of medical records. The following parameters have been obtained: age, gender, medical diagnosis (ICD-10) including subtypes of psoriasis, treatment, the clinical course of the disease and results of the laboratory blood tests including cholesterol fractions and blood glucose level.

The statistical analysis of collected data has been conducted.

RESULTS

The total number of patients enrolled in the research was 73 with 47 females (64.38%) and 26 males (35.62%). The age characteristics of the study group are presented in Table 1.

The predominant type of psoriasis was psoriasis vulgaris, which has been diagnosed in 95% of patients. Less common subtypes were generalized pustular psoriasis (4.11%) and psoriatic arthritis (1.37%). Almost 20% of the admitted patients had documented family history of any type of psoriasis.

Table 1. Age characteristics of patients

	Girls	Boys
Number of patients	47 (64.4%)	26 (35.6%)
0–6	3 (4.1%)	1 (1.4%)
7–12	23 (31.5%	15 (20.5%)
13–17	21 (28.8%)	10 (13.7%)
Age (mean ± SD)	11.53 ± 3.36	10.96 ± 3.49
	11.33 ± 3.4	

SD — standard deviation

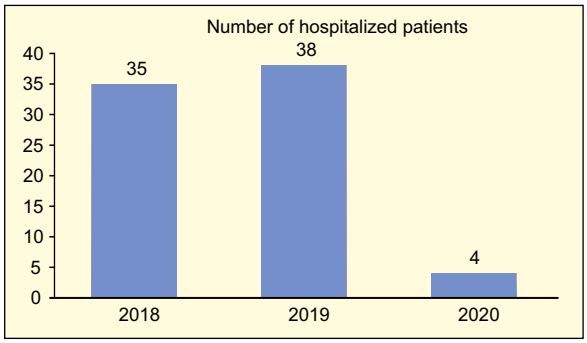

Figure 1. Number of hospitalized patients between 2018–2020

Due to exacerbation of psoriasis, 26 patients required readmission to the ward more than once, which represents 35.62% of the whole group. Admission differed significantly over the years as stated in Figure 1. The low number of psoriasis patients admitted to the dermatology ward in 2020 could be related to the COVID-19 pandemic and internal administrative changes in a hospital due to epidemiological situation. The mean age of onset of first symptoms has been determined as 7.2 ± 3.6 years. Averagely the proven duration of the disease in patients enrolled in the present study was 4 ± 2.17 years.

In psoriasis patients' diverse abnormalities in blood tests were observed. Dyslipidaemias were documented in 23.4% of patients, which was considered the most common abnormality (more detailed information is provided in Fig. 2). Elevated aspartate transaminase (AST) and/or alanine transaminase (ALT) levels were observed in 13.7% of cases. Increased levels of C-reactive protein (CRP), which is one of the determinant proteins of inflammation, was noted in 5.48% of children. Psoriasis was accompanied by hyperglycaemia in 1.4% of patients.

15% of the study group present various comorbidities — hypothyroidism, epilepsy, diabetes, obesity, coeliac disease, urolithiasis, Hashimoto's disease, Down syndrome, hypertension, atopic dermatitis, hearing loss, congenital ichthyosis, non-alcoholic fatty liver disease (NAFLD) and motor aphasia (Fig. 3).

97.26% of patients were treated using non-biological treatment. Topical treatment and its combination with phototherapy were the most commonly used — 87.3% of therapies. The oral treatment was significantly less frequently used. 12.6% of patients received systemic treatment. 77.78% of patients treated with oral therapeutics received acitretin. Others enrolled systemic drugs were methotrexate and cyclosporine.

DISCUSSION

Psoriasis is a systemic chronic autoinflammatory disorder that affects many organs and may lead to serious comorbidities [7, 8]. Although the knowledge of this disease has expanded during recent years and new possible therapies have approached, there is still limited information about epidemiological aspects and treatment in paediatric groups with psoriasis.

Most systemic medications in paediatric groups of patients physicians are forced to use off-label [13]. According to Haulrig et al. [14], most of the used drugs in children with psoriasis are not formally approved and treatment is based on clinical trials, case reports and retrospective studies. In the present study systemic drugs such as methotrexate or acitretin were used off-label with a satisfying outcome. Another notable example of off-label use in this study is biologics. They are treatments for serious and/or recalcitrant cases of plaque, pustular, and erythrodermic psoriasis, as well as those accompanied by psoriatic arthritis [1]. Yet, none of the children in this study received them till 2020. During the last few years five biologics (etanercept, adalimumab, ustekinumab, ixekizumab and secukinumab) have been approved by the European Medicines Agency to prescribe them to children, but the only one of them — etanercept is available in Poland from 2020 due to updated drug prescription programme founded by Polish Government which seems to be the reason for the limited group of patients in this study treated with this kind of treatment [15–17]. Nevertheless, the situation is changing and requires further investigation. Furthermore, this year Polish Dermatological Society created recommendations for diagnosis and treatment of paediatric psoriasis, where data confirming the efficacy of the drugs used off-label in children's psoriasis therapy are emphasised. Yet, there is also a need for future cohort studies to examine the efficacy and safety of unapproved treatments since they constitute the foundation of current treatment options.

On the other hand, comorbidities connected with psoriasis seem to be a challenging problem for paediatricians. New guidelines of management of paediatric psoriasis created by the American Academy of Dermatology in association with the National Psoriasis Society, the underlying importance of the most common comorbidities among paediatric patients and

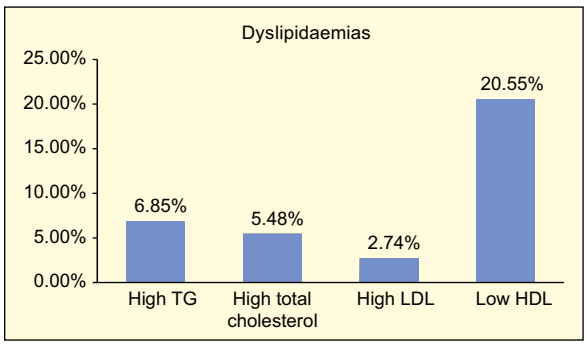

Figure 2. Dyslipidaemias in paediatric patients with psoriasis; HDL — high-density lipoprotein; LDL — low-density lipoprotein; TG — triglycerides

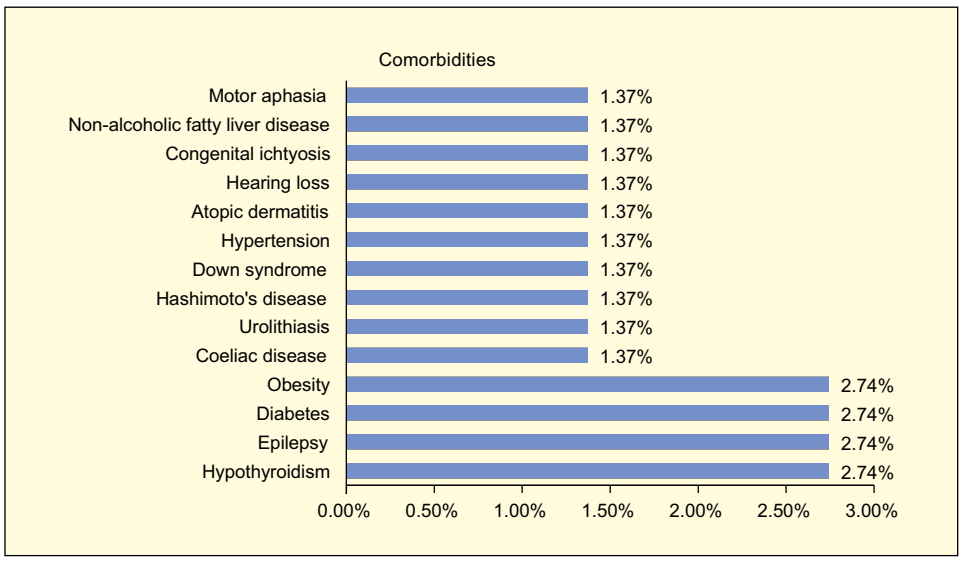

Figure 3. Comorbidities in the study group

recommendation for screening each of them. Another screening recommendation for comorbidities in paediatric psoriasis was created by Kang et al. [11] to support first care providers in taking care of children with psoriasis. The research focus on psoriasis impact on many organs and proper treatment for both cutaneous and extracutaneous manifestation can only improve patients' quality of life. The most intriguing outcome in the present research was the low- high-density lipoprotein (HDL) level, which is a risk factor for cardiovascular diseases, found in about 20% of the study patients. Some studies have shown that increasing the concentration of HDL-cholesterol using statins can slow and even reverse the progression of coronary atherosclerosis and can reduce cardiovascular (CV) risk in the majority of people with dyslipidaemia [8, 18]. It requires further investigation, yet paediatricians' early intervention and proper treatment might moderate that risk. According to new guidelines created by the American Academy of Dermatology in association with the National Psoriasis Society children with dyslipidaemia, which is a CV risk factor, should be screened more frequently than it is recommended by the American Academy of Pediatrics, as well as they should be referred to their primary care provider or an endocrinologist for further assessment and management.

Although dermatologists play a key role in psoriasis treatment, discussion with paediatricians about the complexity of the disease, the potentially associated comorbidities and the therapeutic options and their risks is crucial for patients' well-being. An interdisciplinary approach in paediatric psoriasis was emphasized by the authors of the newest guidelines of management of paediatric psoriasis made by the American Academy of Dermatology in association with the National Psoriasis Society [10]. It is worth remembering that treatment of psoriasis in the paediatric population is complex and requires reducing skin symptoms by dermatologists as well as proper management of underlying comorbidities by paediatricians.

CONCLUSIONS

Considering all gathered epidemiological data, they are quite similar to the ones that are available in the literature. Nonetheless, it is significant that psoriasis is a systemic disorder and triggers not only treat skin symptoms, but also other underlying disorders. Serious comorbidities described in the literature have been found in the study patients as well. Among them, obesity, hypertension and diabetes seem to be the most alarming. The regular screening for comorbidities in children with psoriasis and hence proper management of comorbidities is essential to minimize future risks connected with those diseases. Besides, dyslipidaemia has been found in a considerable number of patients. 20% of patients had low HDL, which is a crucial indicator of the risk of future cardiovascular events. Therefore, cooperation between dermatologists and paediatricians is demanded to control the severity of the disease and the development of comorbidities in psoriatic patients. Furthermore, paediatricians are often the ones who can notice the first symptoms of psoriasis or exacerbation far before dermatologists, so early diagnosis might hasten treatment.

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Conflict of interest

The authors declare that they have no conflict of interest.

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