

Psoriasis in the pediatric population: clinical presentation, management and quality of life assessment

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ABSTRACT

Psoriasis is a chronic, non-infectious, inflammatory immune-mediated skin disease. It progresses with periods of exacerbation and remission. Genetic, epigenetic, and environmental factors all play a role in the development of psoriasis. Psoriasis is a common dermatosis affecting both adults and children. The pediatric population has the same clinical subtypes of psoriasis as adults, while lesions may differ in distribution and morphology. Children are more likely to report skin pruritus and burning. The diagnosis of psoriasis is mainly based on clinical features. Psoriasis patients are predisposed to developing cardiovascular disease, metabolic syndrome, and its components, type 2 diabetes, and inflammatory bowel disease. Psoriasis can hurt the quality of life, school life, and peer interactions of children and adolescents. Treatment of children with psoriasis — should be individualized and selected according to the severity of the skin lesions and age. Topical medications are used to treat the mild form, while general conventional and biological treatment is used for the moderate and severe cases. This paper reviews the current state of knowledge on the clinical features, therapeutic management, and impact on the quality of life of psoriasis in the pediatric population.

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Key words: psoriasis, children, comorbidities

INTRODUCTION

Psoriasis is a chronic, recurrent, systemic, inflammatory immune-mediated skin disease. In recent years, there has been an increase in the incidence of moderate to severe psoriasis in children. It predisposes to developing concomitant conditions, such as metabolic syndrome, cardiovascular disease, psoriatic arthritis, inflammatory bowel disease, non-alcoholic fatty liver disease, and coeliac disease, as confirmed by numerous population studies. Psoriasis is one of the most common skin disorders. It affects approximately 1–3% of the population worldwide. This disease accounts for up to 4% of all dermatoses in children under 16. The incidence of psoriasis in children is 0.7–2.1%, and the average age of first symptoms is 8–11 years. The incidence of this disease increases linearly with age, most commonly developing in the teenage years. Individuals with a family history are more likely to be affected by psoriasis. The onset of the disease in childhood may portend a severe course [1–4]. Environmental factors affecting the clinical course of psoriasis in children and adolescents are presented in Table 1.

Table 1. Environmental factors impacting the clinical course of psoriasis in children and adolescents

Infections — bacterial (especially streptococcal), viral, fungal, parasitic
Trauma — Koebner phenomenon (epidermal damage, tattoos, burns, vaccinations, injections, bites)
Mental stress
Dental caries
Chronic tonsillitis and/or paranasal sinusitis
Surgical procedure
Unhealthy diet
Obesity/overweight
Prolonged exposure to sunlight
Certain medications (non-steroidal anti-inflammatory drugs, β-blockers, lithium, antimalarials)
Nicotine and alcohol

CLINICAL PICTURE OF PSORIASIS IN CHILDREN

Children's skin has a different structure and greater hydration and is immature compared to adult skin. While the same subtypes of the disease are found in the pediatric population, the clinical course differs, including the location and

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nature of the lesions. As in adults, plaque psoriasis is the most common, occurring in about 70% of patients. A subtype that is more common in children than in adults, accounting for about 30% of cases, is guttate psoriasis, with a sometimes self-limiting course, often preceded by streptococcal infection of the throat or nappy area and presents with a sudden eruption of monomorphic papules less than 1 cm in size mainly on the trunk. Inverse psoriasis is also more common in children, where erythematous-infiltrative, non-scaly lesions are located in the skin folds and the genital area, often accompanied by secondary *Candida* or *Streptococcus* infection. Generalized pustular psoriasis and psoriasis confined to the hands and feet and psoriatic erythroderma are less common in children. The appearance of the skin lesions may be atypical; the psoriatic plaques are smaller, thinner, and sometimes devoid of scales; the lesions may be oozing or erythematous-oedematous. Children are more likely to report pruritus. The head is most often the first location of skin lesions in children. Skin lesions can be generalized or limited to certain areas of the body, for example, the nails, the nappy area, the scalp. Approximately one-third of children with plaque psoriasis have nail changes in the form of the so-called oil drop sign, punctate pitting known as the thimble sign, onycholysis, subungual hyperkeratosis, and onychodystrophy. The course of the disease varies between age groups. Infantile psoriasis typically affects the face and the nappy area, manifesting as recurrent nappy dermatitis. Skin lesions in younger children are more likely to appear on the face, eyelids, ear auricles, and flexor and intertriginous areas. In adolescents, the appearance and location of the lesions resemble adult lesions [5].

PSORIASIS DIAGNOSIS

The diagnostic and therapeutic approach in children with psoriasis must account for comorbidity in psoriasis and psychological aspects. The diagnosis of psoriasis is based on assessing the clinical features, typical location, and morphology of the skin lesions. Dermatoscopy is also helpful in making the diagnosis. In atypical cases, histopathological examination is conclusive [6]. To obtain a reliable result, it is necessary to discontinue topical anti-inflammatory treatment before collecting a skin sample for histopathological examination. A family history of psoriasis is worth taking into account. To choose the right treatment and management for children with psoriasis, it is necessary to assess the severity of the disease and determine how it affects the patient's quality of life. We use appropriately selected scales for this purpose.

SEVERITY OF THE DISEASE PROCESS

The Psoriasis Area and Severity Index (PASI) assesses the severity of the skin lesions. And the body surface area (BSA) determines the skin area affected by the lesions. The Children's Dermatology Life Quality Index (CDLQI), ada-

pted for children aged 4–16, determines the quality of life in children. In contrast, the Family Dermatology Life Quality Index (FDLQI) assesses the family's quality of life [7].

Based on the severity of the skin lesions, psoriasis is categorized into mild, moderate, and severe. Mild psoriasis is identified when the PASI score does not exceed 10 points, skin lesions affect < 10% of the total skin area (BSA < 10%), and the negative impact of the disease on quality of life according to the CDLQI is less than 10 points. Moderate to severe psoriasis is diagnosed when at least one index score is above 10 or when psoriatic lesions are localized in conspicuous areas or significantly restrict daily activities. It is recognized that in children, the analogous division of psoriasis can be used as in adult patients or solely based on BSA, where a psoriatic skin lesion involvement of less than 3% indicates mild psoriasis, a BSA of 3 to 10% moderate psoriasis and a BSA of more than 10% severe psoriasis. The area of skin affected by psoriatic lesions is determined by the rule of nines appropriate to the child's age.

COMORBIDITY IN PAEDIATRIC PSORIASIS

Psoriasis is the result of a systemic inflammatory process that not only leads to skin lesions but also increases the risk of metabolic syndrome, obesity, impaired glucose tolerance, lipid disorders, cardiovascular disease, hypertension, inflammatory bowel disease, mood disorders, coeliac disease, non-alcoholic fatty liver disease, and autoimmune diseases. This relationship has been confirmed in numerous studies in the adult population. The prevalence of comorbidities in pediatric psoriasis is not clearly defined; however, a number of studies have been published to date confirming this relationship [8–11].

Tollefson et al. [12], in a study involving a population of several thousand children with psoriasis, showed an increased prevalence of obesity, lipid disorders, hypertension, impaired glucose tolerance, polycystic ovary syndrome, non-alcoholic fatty liver disease, and elevated liver enzymes in children with psoriasis compared to a control population. An increased prevalence of abdominal obesity and elevated glycated hemoglobin was demonstrated in 81 Danish adolescents with mild psoriasis. However, there were no significant differences from the norm in blood pressure, lipid, or C-reactive protein levels [13]. Another study involving Portuguese children aged 5–15 with moderate to severe psoriasis reported an increased prevalence of overweight, obesity, abnormal blood pressure, and an atherogenic blood lipid profile [14]. A cross-sectional study of children with psoriasis was carried out in Morocco between 2014 and 2016, seeking to describe the diseases associated with psoriasis. The co-occurrence of childhood psoriasis with numerous conditions, including abdominal obesity, overweight, dyslipidemia, coeliac disease, vitiligo, and alopecia areata, has been confirmed [15]. There are also isolated reports

in the literature indicating no association between pediatric psoriasis and metabolic and cardiovascular disease, except for overweight and obesity, whose prevalence is clearly demonstrated in numerous publications [16]. The analyses presented here suggest the validity of screening for comorbidities, including metabolic disorders in children with psoriasis, and promoting a healthy lifestyle in these patients. As the severity of psoriasis increases, there is a higher risk of concomitant diseases [17–20].

QUALITY OF LIFE IN CHILDREN WITH PSORIASIS

Of all skin diseases, psoriasis has what is considered to be one of the most severe negative impacts on quality of life, comparable to chronic diseases affecting other organs. Deterioration of peer relationships, frustration due to delayed response to treatment, perceived pruritus, and a sense of different appearance are observed [21]. For some patients, the mild disease course can also be a significant problem, especially if the skin lesions are present in exposed areas such as the scalp, face, or hands [22, 23]. The skin lesions and pruritus make it challenging to carry out daily activities, play sports and games, and impair concentration when studying. Reduced physical activity has a negative impact on overall health and increases the risk of metabolic syndrome comorbidity. Patients avoid engaging in potentially stressful activities for fear of exacerbating the disease. Children and adolescents have higher school absences due to exacerbations of the disease and accompanying psychological and emotional problems. Many adolescents are concerned about finding a future life partner and limiting their ability to pursue certain professions [24]. Many papers highlight the fact that the disease has an adverse impact on the quality of life of parents and carers of children. In one study, parents of children with psoriasis were interviewed and confirmed that their child's disease causes anxiety about their child's well-being and health and negatively affects their social and professional life. For many, psoriasis treatment is burdensome due to the need for repeated, time-consuming application of topical medications [25–27].

To provide optimal care for patients with psoriasis, dermatologists should not only focus on the physical symptoms but also pay attention to the psychosocial aspects of psoriasis patients' lives. Psoriasis education and psychological care are very important [28]. Advice for patients suffering from psoriasis is presented in Table 2.

TREATMENT

Treating psoriasis in children and adolescents is challenging for dermatologists. The different treatment methods are selected individually depending on the disease severity, the lesion location, and the child's age. The goal of treatment is to achieve clinical remission and improve quality of life [29]. Topical treatment is used to manage the mild type.

Table 2. Advice for psoriasis patients

Watch your weight and maintain a healthy diet
Avoid psoriasis triggers
Treat the foci of infection
Avoid mechanical injury
Maintain a hygienic and healthy lifestyle
Be aware of potential comorbidities
Participate in regular education on the course, available treatment options, and the impact of lifestyle on psoriasis
Undergo regular dental check-ups
Use psychological support
Be aware of the existence of patients' associations, support groups, or foundations working on behalf of patients

The basic principle of topical therapy is removing the scale and resolving the inflammation, followed by maintenance treatment, whose duration is decided individually by the doctor. Due to the young patients' mentality, it is important to bear in mind the possibility of transferring the drug to unwanted areas, especially the face, eye, or mouth area, which increases the risk of irritation [30–33]. Phototherapy is still an established therapeutic method. In children, irradiation with 311 nm (the so-called "narrow-band" UVB) and UVA (315–400 nm) rays with the topical or oral application of psoralens (PUVA) is used. This treatment is given to children over 12 due to the use of psoralens [34]. The decision to initiate systemic treatment in children with acitretin, cyclosporine, methotrexate, or biologic therapies must be made judiciously, based on the severity of the skin lesions and the response to previous treatment. It is also important to evaluate comorbidities with particular attention to psoriatic arthritis and metabolic disorders. Psoriasis treatment should include education about the pathophysiology of the disease and the need to prevent exacerbation triggers such as stress, trauma, and infection [35–40].

CONCLUSIONS

Psoriasis is a chronic dermatosis that significantly affects patients' quality of life. In recent years, there has been an increase in the incidence of pediatric psoriasis, particularly moderate to severe. When managing a psoriasis patient, it is essential to be aware of the increased risk of accompanying diseases, including metabolic disorders. Due to the multitude of therapies available and the diversity of the clinical picture, each patient's case should be approached individually.

Conflict of interest

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