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Treatment of Childhood Psoriasis

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SUMMARY Psoriasis is a common disease in children and adolescents. Because of the chronic course of the disease, appropriate choice of therapy in particular stage of the disease, so-called rotation therapy, is of paramount importance. This article provides a review of therapeutic options for childhood psoriasis. Local therapy for psoriasis in children consists of corticosteroid preparations, calcipotriol, tars and dithranol, local retinoids, and local immunomodulators. Phototherapy (narrow band UVB, photochemotherapy PUVA baths) is now a part of psoriasis therapy in children. Systemic therapy retinoids (acitretin) methotrexate, cyclosporine is only used in severe forms of the disease such as erythrodermic, pustular and arthritic psoriasis. All these therapeutic options can be used as monotherapy or in various combinations.

KEY WORDS: psoriasis; children; therapy

INTRODUCTION

The treatment of childhood psoriasis requires serious and thorough consideration because of its chronic nature and importance of appropriate therapeutic approach in particular stages of the disease. Education of both psoriatic children and their parents is the first step in the treatment of childhood psoriasis (1). They should be properly explained the chronic nature of the disease and its tendency to exacerbations as well as spontaneous remission, especially in childhood (2). Pediatric psoriatic patients and their parents should be warned of the factors provoking psoriasis and importance of their elimination. Environmental factors that cause psoriasis in children with genetic susceptibility to the development of psoriasis include skin infections and skin lesions. The most common provoking factors for childhood psoriasis are infections, primarily of upper respiratory tract, caused by hemolytic streptococcus (3). In such cases, it is necessary to treat the infection with antibiotics, which is usually followed by improvement in the clinical picture of psoriasis. In some patients with guttate psoriasis (Fig. 1), prophylactic use of antibiotics or tonsillectomy is recommended (1). Koebner phenomenon, also known as isomorphic effect manifested by the appearance of psoriatic lesions at the site of mechanical skin trauma, sunburn, vaccination, etc., is rather common in childhood psoriasis. Therefore, these children and their parents should be explained the need of avoiding chronic skin irritation, recurrent skin lesions on physical activity, and wearing tight clothes. As psychical stress is an important factor in the development of childhood psoriasis, the child should

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be encouraged to communicate his/her troubles frankly and without fear, and to learn how to cope successfully with this chronic disease. Special attention should be paid to adolescents who mostly suffer for their skin appearance (4).

LOCAL THERAPY FOR CHILDHOOD PSORIASIS

Currently, local therapy for childhood psoriasis generally consists of local corticosteroids and calcipotriol. Despite numerous side effects of **local corticosteroids**, they have found wide application in all forms of psoriasis because of their rapid action, simple use, and availability. In children, the use of potent local corticosteroids is indicated for psoriatic plaques on the trunk and extremities with a pronounced inflammatory component. Therapy is administered twice daily for 14 days, to be continued with less potent corticosteroid preparations or neutral agents, depending on clinical picture. In case of a pronounced hyperkeratotic component, combined short-term application of a salicylic acid preparation is advised. Resistant plaques can be treated by short-term drug application under occlusive dressing, thus greatly enhancing its efficacy but also the likelihood of side effects. Short-term (up to 7 days) use of nonfluoridated preparations is recommended for the cheeks, auricles, genitalia and flexural surfaces. Local corticosteroids have a prominent role in rotation therapy for psoriasis, therefore it is of utmost importance to use them under physician's supervision to achieve highest therapeutic efficacy while avoiding numerous potential side effects. It should be noted that various side effects of local corticosteroids such as skin atrophy, telangiectases, and especially striae may frequently occur at prepubertal and pubertal age after the use of very potent corticosteroid preparations (1,5) (Fig. 2).

Calcipotriol, a synthetic vitamin D analog, is efficacious in the treatment of childhood psoriasis. It is advised to use it twice daily for 6 weeks, while initial results can be observed in 2 weeks. A number of clinical studies including a large number of children aged 2 years and older have demonstrated that calcipotriol is an efficacious and safe local antipsoriatic from early childhood. It should be applied over not more than 30% of the total body surface. Unwanted reactions include possible irritation at the site of application (6,7).

Use of calcipotriol in children needs further studies with respect to tolerability and long-term use.

Tar and **dithranol preparations** can be used in older children. In our setting, these preparations are rarely used because patients tend to avoid them, since they may cause skin irritation, skin discoloration around the site of application, and underwear stain. Yet, these agents should not be forgotten when deciding on the most appropriate therapeutic option. It should be noted that dithranol (0.3%-0.5%), carefully used as short contact therapy (20 to 60 minutes) upon involved skin areas under parental supervision, is highly efficient (8).

Tazarotene, a local retinoid, is used in the form of 0.05% and 0.1% gel. As it frequently causes skin irritation, it is used in combination with local corticosteroids of moderate and high potency. Tazarotene and corticosteroid preparations are applied onto the psoriatic focus once daily each. As tazarotene may cause skin irritation even when applied in this combination, it is not frequently used in the treatment of childhood psoriasis (1,9).

Topical calcineurin inhibitors such as **pimecrolimus** and **tacrolimus**, recently successfully used in the management of atopic dermatitis, have proved efficacious in the treatment of facial and flexural psoriasis (10,11). However, there are no controlled clinical studies to demonstrate the efficacy of tacrolimus in the treatment of psoriasis in children.

Neutral preparations may be used in mild forms of the disease because they are efficient in the reduction of scaling but cannot replace differentiated therapy when inflammatory component is present. These preparations are also efficient in preventing the occurrence of new psoriatic lesions, especially in winter when the skin is drier.

Phototherapy has become an integral and unavoidable modality of psoriasis treatment also in children. Phototherapy is indicated if psoriatic plaques involve more than 20% of the body area and fail to regress with local therapy. It should be noted that the use of phototherapy in children requires close cooperation with parents and high competence of the dermatologist and other medical staff involved in therapy administration. The University Department of Dermatology and Venereology, Zagreb University Hospital Center in Zagreb has long-term experience in the use of phototherapy in children as young as 3 years of age. At our Department, only narrow band UVB (311±1 nm) is used in children. The advantages of narrow band UVB therapy over conventional UVB therapy in children are higher efficacy, lower

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erythemogenic potential, prolonged periods of remission, and safety. As we consider that determination of minimal erythemogenic dose is a time consuming and inappropriate test for children, we do not use it as a routine method. Since there is no standard protocol in the world literature for phototherapy administration in children, we follow our own protocol tailored to each individual child's skin type and based on our own experience published in international periodicals (12,13).

In pediatric patients, a combination of narrow band UVB phototherapy and local therapy (calcipotriol, local corticosteroids, and less frequently dithranol) is used to increase therapeutic efficacy and to reduce the length of children's exposure to UV beams. Undesired side effects of phototherapy are classified into short-term, which are usually mild and may include erythema, skin dryness with pruritus, and herpes virus activation; and long-term, which include premature skin aging and photocarcinogenesis (12).

The parents of children undergoing phototherapy should be explained that the dose of UVB irradiation received by phototherapy will cumulate with the radiation received on sun exposure. Photochemotherapy (PUVA) can be used exceptionally in severe cases of psoriasis in patients younger than 16 years involving more than 30% of body surface that fail to respond to the above therapeutic modalities. At our Department, only PUVA baths are used in the treatment of psoriasis in patients aged <18, because this therapy is associated with less side effects, shorter period of photosensitivity, and shorter time of exposure compared to oral PUVA. Only dermatologists with relevant experience in phototherapy may prevent acute and chronic side effects of PUVA therapy through careful patient selection and use of individualized regimens. Children and adolescents receiving PUVA therapy require life-long monitoring (14).

The beneficial effect of sunlight on the skin of patients with chronic psoriasis has long been known. Controlled sun exposure and stay at seaside during summer are recommended in the management of childhood psoriasis.

SYSTEMIC THERAPY FOR CHILDHOOD PSORIASIS

Systemic therapy is only used in severe forms of the disease such as erythrodermic, pustular and arthritic psoriasis where local therapy has proved inefficient (Figs. 3 and 4).

Methotrexate is indicated in severe forms of generalized psoriasis that fail to regress to the above therapy, in exfoliative erythrodermic, pustular and arthritic psoriasis. Therapy with methotrexate does not differ substantially between children and adults. Prior to therapy introduction, laboratory blood count tests and liver enzyme tests have to be obtained. The treatment begins with a test dose of 2.5 mg/week, which is then gradually increased to the maximum of 7,5 mg/week, depending on body weight. Control laboratory blood count tests and liver enzyme tests are regularly obtained, whereas liver biopsy is not needed in children. The most common side effects associated with methotrexate therapy are nausea, headache and anorexia; however, the most serious complication is bone marrow suppression. The possible long-term oncogenic risk should be taken in consideration in children administered methotrexate, although it has not yet been positively defined. The children who cannot take methotrexate *per os* can be administered it by intramuscular or intravenous route on a weekly basis. Remission of the disease is usually achieved within 3-6 weeks of therapy initiation. When remission has set in, the dose of methotrexate should be tapered (e.g., by 2.5 mg/month) to the maintenance dose and then to therapy discontinuation (15,16).

Oral retinoids are used in the treatment of severe forms of pustular and erythrodermic psoriasis in children. In case of pustular psoriasis, therapy begins with acitretin in a dose of 0.75-1.00 mg/kg body weight daily; in case of erythrodermic psoriasis, lower doses are used, 0.25-0.5 mg/kg body weight daily. The dose is gradually tapered, depending on therapeutic response and side effects. During treatment, control laboratory blood count, liver enzyme, cholesterol and triglyceride tests have to be regularly performed. Radiologic examinations should also be regularly performed for the potential toxic effects of retinoids on the skeletal system (premature epiphyseal fusion and hyperostosis). Contraception is warranted in pubertal female patients because of the teratogenic effects of retinoids.

Oral retinoids can be used in older children with severe, relapsing forms of generalized psoriasis in placibus, however, always in combination with other therapeutic options and over a short period of time (17, 18).

Cyclosporine is used in the treatment of severe forms of childhood psoriasis which fail to regress to other therapies, exfoliative erythrodermic and pustular psoriasis. Therapeutic dose of cyclo-

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sporine is 2.5-5 mg/kg body weight daily for 3-4 months, whereafter the dose is tapered to therapy discontinuation. During treatment, control laboratory blood count, liver enzyme, urea, creatinine tests and blood pressure measurements have to be regularly performed. The most common side effects include hypertension, renal toxicity and hepatotoxicity. On making therapy decision, the increased oncogenic risk in children administered cyclosporine should be taken in consideration (19,20).

CONCLUSION

In the management of childhood psoriasis, the chronic nature of the disease should never be forgotten, necessitating caution on choosing therapy for every new exacerbation of the disease. Results obtained in population studies are used on patient counseling. According to literature, the risk of developing psoriasis is 4% if neither parent is affected, rising to 28% if one parent has psoriasis, and to 65% if both parents are affected (21). The need of close cooperation of parents and physicians dermatologists in the diagnostic and therapeutic approach to childhood psoriasis cannot be overemphasized.

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