

A 12-year-old Girl with Severe Plaque Psoriasis and Down Syndrome Treated Successfully with Etanercept

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ABSTRACT The association between Down syndrome and psoriasis is unclear. Immunological abnormalities that present in individuals with Down syndrome result in mild immune debilitation, thus the risk of infectious complications during immunosuppressive therapy might be higher in this group of patients. We present a case of 12-year-old girl with severe plaque psoriasis and Down syndrome, who was initially treated with cyclosporine with good response. However, the drug was withdrawn due to massive viral warts development and loss of efficacy. Afterwards, the girl was treated with etanercept in short 10 week and long 24 week courses with excellent response. The presented case is the first report of a child with Down syndrome and concomitant severe plaque psoriasis treated successfully with etanercept.

KEY WORDS: childhood psoriasis, Down syndrome, biologic therapy

INTRODUCTION

Down syndrome (DS) may be associated with various skin conditions, including xerosis, alopecia areata, vitiligo, atopic and seborrheic dermatitis, keratodermas, skin infections, and many others (1,2). Conflicting data are available on the association between DS and plaque psoriasis (PP) (1,3). Due to multiple immunological abnormalities observed in individuals with DS which result in mild immune debilitation, the decision on initiation of systemic immunosuppressive treatment should be made particularly carefully (4,5). Cases of severe PP in children with DS often constitute a treatment challenge.

CASE REPORT

A 12-year-old girl with DS and severe PP refractory to topical agents was admitted to our Department 2.5 years ago. The first PP skin lesions had appeared when she was 4 years old. At the time of admission to our institution, almost the whole body surface was af-

ected with psoriatic plaques (psoriasis area severity index (PASI) score: 41, body surface area (BSA): 78%; Figure 1). Because the patient's skin lesions usually worsened after sun exposure, phototherapy was not considered as a treatment option. During the first hospitalization in our Clinic, therapy with cyclosporine A (CsA) was initiated (3.5 mg/kg/d, P.O.), with marked improvement observed two weeks later. However, the dose was tapered to 1.7 mg/kg/d because of elevated liver enzymes. During the next 6 months, we achieved almost complete remission of PP, with only occasional appearances of mild psoriatic lesions on the elbows and dorsal surfaces of the hands. We later observed the appearance of multiple viral warts on the fingers, so CsA was withdrawn and topical treatment with 5-fluorouracil and salicylic acid was initiated, with the subsequent disappearance of warts. Due to PP relapse observed 3 weeks after discontinuation of CsA, the therapy was initiated again (1.7 mg/kg/d)



Figure 1. Extensive psoriatic lesions covering most of the body surface.

with satisfactory, but not complete improvement. Unfortunately, 8 months later we observed a severe flare of PP, mostly on sun-exposed areas (PASI: 12.7, BSA: 15.5%; Figure 2). CsA was withdrawn, and etanercept (ETN) 0.8 mg/kg was administered subcutaneously every week. A rapid improvement was seen as soon as 1 week after the first injection, and almost complete remission was achieved during the following weeks, with only residual scaling observed on the lower legs and forearms (PASI: 2.0, BSA: 5.5% at week 8; Figure 3). Unfortunately, we had to stop therapy 10 weeks later because of the lack of refunding possibilities. After ETN discontinuation, we observed a long-term alleviation of PP, and the skin lesions were controlled well with topical agents over the next 8 months. Since then, 2 severe exacerbations of PP occurred, both after sun exposure in the summer months, which were completely alleviated by 24-week courses of ETN.

DISCUSSION

The association between PP and DS is unclear. Quite recently, it was suggested that a dysregulation of the interferon- γ system is responsible for susceptibility to PP in the DS population (6). Moreover,



Figure 2. Exacerbation of skin lesions during treatment with cyclosporine.

Table 1. Characteristics of patients with Down syndrome and plaque psoriasis treated with biologic agents (references in brackets)

Demographic data	Failed systemic treatments	Successful treatment
20-year-old man (6)	etanercept 50 mg/week + methotrexate 15 mg/week	adalimumab 40 mg S.C. every other week + methotrexate 15 mg/week
12-year old boy (6)	-	adalimumab 40 mg S.C. every other week
30-year-old man (12)	topical agents; cyclosporine, methotrexate- contraindicated	etanercept 25 mg S.C. twice a week
31-year-old man (13)	anti- tumor necrosis factor agents	ustekinumab 45 mg S.C. initially and 4 weeks later, followed by 45 mg every 12 weeks

immunological alterations, including reduction in B lymphocytes and CD4(+) T-cells, the increase in CD8(+) T-cells, and expansion of natural killer (NK) cells result in increased susceptibility to infections and malignancies in this group of patients (4,5). Thus, a higher risk of infectious complications during immunosuppressive treatment is expected and requires special care in making therapeutic decisions.

Approximately 30% of all patients with PP experience the onset of the disease before 16 years of age (7). The management of PP in children includes topical agents in mild and moderate cases and systemic immunomodulatory agents in more severe cases; however, standardized guidelines are lacking (8).

Methotrexate (MTX), CsA, and acitretin can be used in justified cases after taking several issues into consideration, such as the severity of disease, psychological burden, comorbidities, patient age, etc. (8). Few reports of patients with severe PP and DS treated with systemic agents are available.

Biologic drugs, which target proteins, cells, and pathways responsible for the development of inflammatory cascade, are considered less immunosuppressive than conventional systemic therapies. They thus represent a promising therapeutic option for children affected with psoriasis and in DS patients. Among biologic agents, the efficacy and safety of ETN is best documented for the treatment of childhood PP with randomized controlled trial with an open-label extension (9,10). ETN was approved by the European Medicines Agency for the treatment of severe PP in children >6 years old in 2009 in intermittent, 24-week treatment courses (8). Notably, 70% of participants in a European expert group consensus consider ETN as the first-line treatment option for juvenile chronic PP due to its good efficacy, tolerability, and safety profiles (11). Potential side-effects are rare and include higher risk of infections, injection-site reactions, anaphylaxis, development of anti-nuclear antibodies, lupus-like syndrome, and pancytopenia (8).

Only anecdotal data were published concerning the biologic treatment of psoriasis in patients with DS, with one case report of a child treated with adalimumab (Table 1). In our patient, therapeutic doses of CsA were hepatotoxic, and the therapy was complicated by viral warts. ETN was well tolerated and effective despite long treatment intervals. To our knowledge, this is the first case of a child with severe PP and DS successfully treated with ETN. We suggest considering biologic therapy, including ETN, as a first-line systemic treatment in children with DS and severe PP.



Figure 3. Resolution of psoriasis after treatment with etanercept.

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