Case Report

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A Case of Psoriasis in A Child with Chronic Hepatitis B Successfully Treated with Secukinumab

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Abstract

Therapeutic options for psoriasis in children with chronic hepatitis B are limited. We report on a 16-year-old boy with both chronic hepatitis B and plaque psoriasis. The psoriasis improved significantly with the fully human monoclonal antibody against interleukin-17A secukinumab treatment for 8 weeks, and there was no significant hepatitis B virus activation during a 7-month follow-up. For the treatment of skin lesions in children with psoriasis complicated with hepatitis B, secukinumab is a new therapeutic option.

Keywords: Children; Hepatitis B; plaque psoriasis; secukinumab.

Key Summary Points

Biological agents have recently improved the treatment of psoriasis, but their use is complicated in patients with chronic viral infections.

Interleukin-17 inhibitors have drastically improved psoriasis in adults with hepatitis B virus infection, when administered with antiviral drugs in adults.

We found that secukinumab, an interleukin-17 inhibitor, combined with entecavir, significantly improved psoriasis, without hepatitis b virus activation, in a 16-year-old boy.

No obvious adverse reactions such as liver and kidney function damage were found during the follow-up.

Introduction

Recently, the application of targeted biological agents has improved the treatment of psoriasis. However, biological agents may change the immune surveillance function of the host and cause the adverse effect of viral replication [1]. Hence, for patients with psoriasis complicated by hepatitis B virus (HBV) infection, it is necessary to use biological agents in concert with anti-HBV drugs and closely monitor HBV-DNA amplification [2].

Previous studies have shown that adult patients with psoriasis complicated by HBV improved drastically when interleukin (IL)-17 inhibitors are administered together with antiviral drugs and the therapy had a low risk of HBV replication [3]. However, there have been no reports of the use of biological agents in children with psoriasis and hepatitis B. We report the case of a 16-year-old boy with plaque psoriasis complicated by chronic hepatitis B who responded well to combination treatment with secukinumab and entecavir.

Case Presentation

A 16-year-old boy with an established (>10 years) history of chronic hepatitis B presented with a 1-year history of red plaques, scaling, and itching. He had been diagnosed with psoriasis and had been receiving treatment with Chinese herbal medicines, which only partially controlled his lesions.

The patient was HBsAg positive at birth, but only began receiving treatment at 15 years of age with dispersible entecavir tablets 0.5 mg/day orally, without regular review. He had no history of other chronic diseases and no family history of psoriasis. His height and weight were 167 cm and 53 kg, respectively. Dermatological examination revealed numerous rounds, erythematous plaques on his trunk and limbs that were covered with thick, silvery-white scales. Scaly patches and bundles of hair were observed on his scalp. The patient had no nail damage or joint symptoms. His Psoriasis Area Severity Index (PASI) score was 9.2 (Figure. 1). Routine blood, urine, and fecal laboratory test results showed normal transaminase, serum urea, creatinine, C-reactive protein, erythrocyte sedimentation rate, interferon-γ release assay for tuberculosis, carcinoembryonic antigen, alpha-fetoprotein, cancer antigen (CA)-125, CA-199, CA-724, cytokeratin 19, and myocardial enzymes.

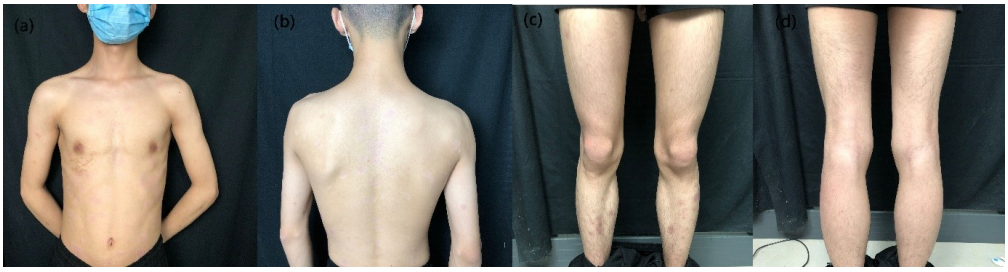

Figure 1: Clinical manifestations of the disease at Week 0 (before treatment)

(a): Anterior view of trunk; (b): Posterior view of trunk; (c): Anterior view of lower extremity; (d): Posterior view of lower extremity

Electrocardiogram, abdominal B-ultrasound, and chest radiograph findings were all normal. However, HBsAg levels were 250 IU/mL (cut-off index [COI], 0.05 IU/mL), HbeAg levels were 2.120 IU/mL (COI, 1.00 IU/mL), HbcAg levels were 9.69 IU/mL (COI, 1.00 IU/mL), and highly sensitive HBV-DNA levels were <20 IU/mL (COI, 20 IU/mL). The patient was administered secukinumab 150 mg subcutaneously at 0, 1, 2, 4, and 8 weeks.

After 1 week of treatment, the patient's skin lesions became thinner (Figure: 2) and within another 3 weeks the scaling had subsided (Figure: 3). Reexamination of the aforementioned laboratory tests showed no obvious abnormalities. Only slightly erythematous plaques were visible, and his PASI score was 3.6. After 8 weeks, the lesions had practically disappeared, with only a few pigmented spots remaining.

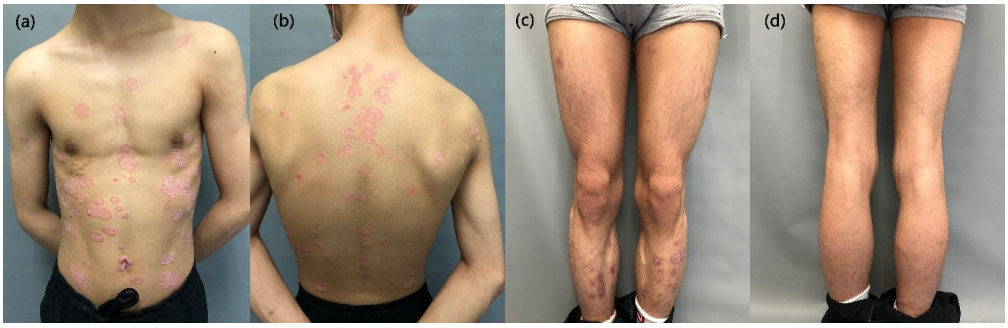

Figure 2: Clinical manifestation of the treatment process at Week 1. The skin lesions became thinner.

(a): Anterior view of trunk; (b): Posterior view of trunk; (c): Anterior view of lower extremity; (d): Posterior view of lower extremity

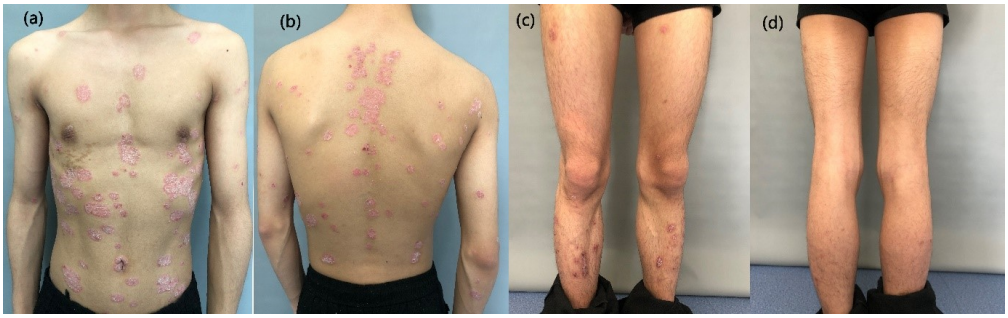

Figure 3: Clinical manifestation of the treatment process at Week 4. All the scaling had subsided.

(a): Anterior view of trunk; (b): Posterior view of trunk; (c): Anterior view of lower extremity; (d): Posterior view of lower extremity

His PASI score was 0.4, and his laboratory test results showed no significant abnormalities (Figure: 4). The lesions recurred after 7 months due to the patient's failure to comply with the medication regimen; however, his laboratory test results were still not significantly abnormal. Unfortunately, the patient was later lost to follow-up.

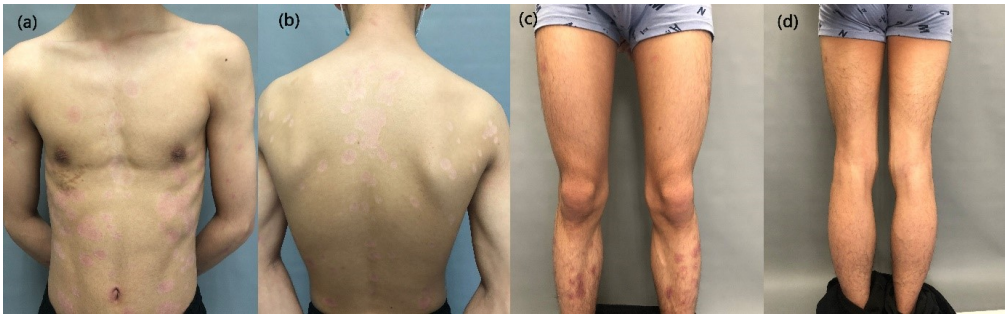

Figure 4: Clinical manifestations of the treatment process at Week 8. The lesions had practically disappeared, with only a few pigmented spots remaining.

(a): Anterior view of trunk; (b): Posterior view of trunk; (c): Anterior view of lower extremity; (d): Posterior view of lower extremity

Discussion

Recently, the use of biological agents to treat psoriasis has increased; however, assessment of their safety and efficacy needs further examination. Although biological agents have no direct hepatorenal toxicity, they may alter the ability of the host immune surveillance system to fight HBV infections, thereby increasing viral activation and replication and resulting in liver damage [4]. Previous studies have reported that many patients with chronic hepatitis B have increased viral replication after receiving treatment with biological agents [5]. Therefore, patients with psoriasis and chronic hepatitis B should be administered an appropriate biological agent only after carefully examining its safety profile [6]. HBV drug resistance and HBV-DNA levels should also be monitored closely.

Secukinumab is a human monoclonal antibody that competitively binds to IL-17A and prevents it from binding to its receptor, thereby inhibiting keratinocyte proliferation [7]. A multicenter, prospective, cohort study of adult patients with psoriasis and hepatitis B showed that the risk of HBV reactivation due to the administration of secukinumab prior to obtaining full antiviral protection was negligible [8].

Pediatric psoriasis is obviously limited in terms of available treatment options. Previous studies have shown that IL-17 inhibitors are safe for treating pediatric psoriasis [6]. Secukinumab was effective for a child with refractory pustular psoriasis, and no adverse reactions were observed [9]. In our case, a child with psoriasis complicated by hepatitis B infection was treated with secukinumab in addition to his antiviral medication, and a good outcome was achieved. However, further research with long-term follow-ups is required to determine the efficacy and safety of this combination.

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Author Contributions

Kuanhou Mou conceptualized the report. Material preparation, data collection and analysis were performed by Qiong Tian, Yingying Yang and Kuanhou Mou. The first draft of the manuscript was written by Qiong Tian and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

Medical writing, editorial, and other assistance

We would like to thank Edit age (www.editage.cn) for English language editing.

Disclosures

Drs Qiong Tian, Yan Zhou, Yingying Yang, and Kuanhou Mou declare that they have no conflict of interest.

Compliance with ethics guidelines

This case report was approved by and carried out according to the guidelines of the Ethics Committee of the First Affiliated Hospital of Xi'an Jiaotong University (Xi'an, China).

Informed consent was obtained from the parents of the patient included in the study.

The patient's parents provided written informed consent regarding publishing the patient's data and photographs.

Data Availability

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

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