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Case Report

A Case of Secukinumab for the Treatment of Psoriasis in a Child with Chronic Hepatitis B

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Introduction

Psoriasis is an immune-mediated, chronic, inflammatory skin disease, and its recurrence is still adifficult problem. 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 with Hepatitis B Virus (HBV), it is necessary to use biological agents under the protection of anti-HBV drugs and closely monitor the quantification of HBV-DNA [2].

Previous studies have shown that adult patients with psoriasis complicated with HBV improve drastically with IL-17 inhibitors under the protection of antiviral drugs, and have a low risk of HBV replication [3]. Some studies have also shown that secukinumab has good efficacy in the treatment of psoriasis in children and does not lead to obvious adverse reactions [4]. We report the case of a 16-year-old boy with plaque psoriasis complicated with HBV who responded well to combination treatment with secukinumab and an antiviral drug.

Case Presentation

A 16-year-old boy with along standing (> 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 received treatment with an oral "Chinese herbal decoction" (the specific ingredients were unknown) and a topical "calcipotriol liniment" in a local hospital, which showed poor efficacy. The lesions had gradually spread over the whole body and numerous thick plaques had appeared over his trunk and limbs. Half a year prior, he had used a "traditional Chinese medicine bath" and a "self-made ointment" (the specific compositions were unknown), which had resulted in slight thinning of all his scales. Three months prior, the skin lesions increased and thickened again. After oral treatment with "Yinxieling granule" and topical treatment with "calcipotriol" and "vaseline," the lesions were only partially controlled. It was easy to recur after fatigue.

The patient had been found to be HBsAg positive at birth and had received antiviral treatment with "entecavir dispersible tablets 0.5 mg/day" orally for 1 year without regular review. He had no history of other chronic diseases and no family history of psoriasis. His height was 167 cm, and his weight was 53 kg. Dermatological examination revealed numerous, round, erythematous plaques over his trunk and limbs, which were partially fused, dry, and covered with thick silvery-white scales. Scaly patches and bundles of hair were observed on his scalp. He had no nail damage or joint symptoms. His Psoriasis Area Severity Index(PASI) score was 9.2.Laboratory results of blood routine, urine routine, and fecal routine tests, levels of transaminase, serum urea, serum creatinine, C-reactive protein, Erythrocyte Sedimentation Rate (ESR), Interferon (IFN)-γ release assay for Tuberculosis(T-SPOT.*TB*), Carcinoembryonic Antigen(CEA), Alpha-Fetoprotein (AFP), Cancer Antigen (CA)-125, CA-199, CA-724, Cytokeratin 19 (CYFRA21-1), and myocardial enzymes, and findings of Electrocardiogram(ECG), abdominal B-ultrasound, and chest radiograph were all normal. However, HBsAg levels were 250IU/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). Upon completion of the above tests, 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 had begun to thin, and another 4 weeks later, all the scales had subsided. Routine blood tests, blood biochemistry, C-reactive protein, and ESR showed no obvious abnormalities. There was no significant increase in highly sensitive HBV-DNA quantification. Only slightly erythematous plaques were visible and his PASI score was 3.6. After 8 weeks, the lesions had practically subsided, with only a few pigmented spots remaining. His PASI score was0.4, blood routine examination, blood biochemistry, C-reactive protein, ESR were not significantly abnormal, and the quantitative level of highly sensitive HBV-DNA was not significantly increased. After that, due to the patient's failure to comply with the medication, the lesions recurred after 7 months. Blood routine examination, blood biochemistry, and T-SPOT.*TB* examination at the time of recurrence showed no obvious abnormalities, and highly sensitive HBV-DNA levels were<20 IU/mL(COI,<20 IU/mL).

Discussion

The pathogenesis of psoriasis is not fully understood, but a variety of cytokines – including IL-17, which is secreted by differentiated and mature Th17 cells – are known to participate in its development, leading to excessive keratinocyte proliferation and synovial cell inflammation [5]. IL-17A is an important inflammatory factor in the IL-17 family. Blocking IL-17A or its receptor may effectively reverse the progression of psoriasis [6]. Secukinumab is a full-human monoclonal antibody that competitively binds to IL-17A and prevents it from binding to its receptor, thereby inhibiting keratinocyte proliferation [7].

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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 leading to liver damage [8]. Previous studies have reported that many patients with chronic HBV have increased viral replication after receiving treatment with biological agents [9]. Therefore, patients with psoriasis and chronic HBV should be administered an appropriate biological agent only after carefully examining its safety profile [10]. HBV drug resistance and HBV-DNA levels should also be monitored closely.

A multicenter, prospective, cohort study of adult patients with psoriasis and HBV had shown that the risk of HBV reactivation due to the administration of secukinumab prior to protection with antiviral therapy is very small [11]. Another study had looked at treatment with secukinumab for up to 52 weeks and had found no significant increase in biochemical markers of liver damage [12]. Based on the results of our case, secukinumab may be a good choice for patients with psoriasis complicated with hepatitis B.

About one-third of patients with psoriasis develop the disease before the age of 18, accounting for about 1 percent of all children [13]. Pediatric psoriasis is obviously limited in terms of available treatment options. Previous studies have shown that IL-17 inhibitors provide good safety in the treatment of pediatric psoriasis [14]. It has been reported that a child with refractory pustular psoriasis was treated with secukinumab, which achieved good efficacy and did not result in any adverse reactions [15]. However, there have been no case reports on pediatric psoriasis complicated with HBV treated by biological agents. In our case, a child with psoriasis complicated with HBV was treated with secukinumab, and a good outcome was achieved.

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