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Case Report

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CUTANEOUS LICHEN PLANUS AS A RARE MANIFESTATION OF CHRONIC HEPATITIS B INFECTION: A CASE REPORT

KRONİK HEPATİT B ENFEKSİYONUNUN NADİR BİR GÖRÜNÜMÜ OLARAK KUTANÖZ LİKEN PLANUS: BİR OLGU SUNUMU

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Abstract

Hepatitis B virus (HBV) infection causes severe liver diseases, including cirrhosis and hepatocellular carcinoma (HCC), and remains a major global health issue, contributing to liver-related morbidity and mortality. Autoimmune conditions like Lichen Planus (LP) can exist in patients because of HBV infection. We present a case of a patient with a history of chronic HBV infection, confirmed by HBV-DNA positivity via polymerase chain reaction (PCR), who developed clinical symptoms of LP. The patient had been receiving antiviral treatment for chronic HBV. Clinical evidence supports the potential link between LP and HBV infection, although the exact mechanisms remain unclear. Further research involving larger patient populations is essential to fully understand this relationship and to improve screening and management strategies, especially in endemic regions.

Keywords Hepatitis B virus · Lichen planus · antiviral agents

Öz

Hepatit B virüsü (HBV) enfeksiyonu, siroz ve hepatosellüler karsinom (HCC) dahil olmak üzere ciddi karaciğer hastalıklarına yol açmakta olup, karaciğer kaynaklı morbidite ve mortaliteye katkıda bulunarak halen önemli bir küresel sağlık sorunu olmaya devam etmektedir. Liken Planus (LP) gibi otoimmün hastalıklar, HBV enfeksiyonuna bağlı olarak hastalarda ortaya çıkabilmektedir. Bu yazıda, HBV-DNA pozitifliği polimeraz zincir reaksiyonu (PCR) yöntemiyle doğrulanmış kronik HBV enfeksiyonu öyküsü bulunan ve klinik olarak LP semptomları gelişen bir olgu sunulmaktadır. Hastanın kronik HBV enfeksiyonu nedeniyle antiviral tedavi almakta olduğu bilinmektedir. Sonuç olarak, Liken Planus ile HBV enfeksiyonu arasındaki olası ilişki klinik verilerle desteklenmekle birlikte, bu ilişkinin altında yatan mekanizmalar henüz tam olarak aydınlatılamamıştır. Bu ilişkinin kapsamlı şekilde ortaya konulabilmesi ve özellikle endemik bölgelerde tarama ve yönetim stratejilerinin geliştirilmesi amacıyla daha geniş hasta popülasyonlarını içeren ileri araştırmalara ihtiyaç duyulmaktadır.

Anahtar Kelimeler Hepatit B virüsü · Lichen planus · antiviral ajanlar

INTRODUCTION

Hepatitis B virus (HBV) is a leading cause of end-stage liver disease, and chronic infection is often persistent throughout life in the patient. Even in vaccinated individuals, new infections still occur, especially in populations where there is poor immunisation coverage (1). Therefore, the subgroup of patients will acquire chronic HBV infection because the virus can escape immune system-induced killing and persist by forming covalently closed circular DNA (cccDNA) inside hepatocyte nuclei (2). The host immune status, age at infection, and viral factors all impact the likelihood of chronicity. Moreover, limited insight into HBV's genome and persistence mechanisms hinders progress (1, 2).

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On the other hand, lichen planus (LP) is a chronic autoimmune disease affecting the skin, mucosa, hair, and nails (3). Although its cause is unclear, viral infections, particularly hepatitis C virus (HCV), may contribute. Additionally, emerging evidence suggests a possible pathogenic link with HBV (4). The HBV positivity rate of 4-9% in patients with oral LP suggests a possible pathogenic relationship (5). Rare LP lesions occur in patients with chronic HBV and those treated with interferon or vaccinated, indicating immune dysregulation (5). HBV-related LP therapy is challenging. Antivirals and corticosteroids help improve lesions by reducing the viral load and immune activation (6, 7).

This case report describes an LP patient who was also positive for HBV, contributing to evidence of their potential link and emphasising the importance of HBV screening and treatment in newly diagnosed LP patients, especially in high-prevalence regions. This could improve patient management and our understanding of both conditions.

CASE PRESENTATION

A 34-year-old male, known as non-vaccinated against HBV, was first diagnosed with HBV infection in 2010 during a routine screening in Pakistan. Serological evaluation showed that he was positive for hepatitis B surface antigen (HBsAg). This information was conveyed to him by the authorities, but no medical records were provided. His older brother and sister were also reported to be HBsAg-positive. Moreover, his mother was known to carry HBsAg, which raises the possibility of vertical transmission, although this could not be confirmed due to a lack of documented medical evidence. Despite the diagnosis, the patient did not receive any antiviral treatment. He also did not undergo regular follow-up for nearly 12 years.

In early 2022, the patient developed itchy, violaceous papular lesions on the trunk and extremities. He consulted a dermatologist in Northern Cyprus, who clinically diagnosed LP and initiated topical corticosteroid therapy (Dermovate, once daily for one week). The lesions initially regressed during treatment but recurred shortly after discontinuation. Considering the potential viral aetiology, the dermatologist requested HBsAg testing. The result was positive, and the patient was subsequently referred to the infectious disease department for further evaluation. Quantitative PCR testing on 2 June 2022 revealed a high HBV DNA viral load of 3.9 x 10^5 IU/mL (Cobas 6800, Roche). Biochemical analysis showed normal liver enzymes (AST 35 U/L, ALT 40 U/L). Although a liver biopsy was recommended to assess hepatic involvement more thoroughly, the patient declined the procedure. Based on the confirmed diagnosis of chronic active HBV infection, antiviral therapy with the proprietary drug of TDF 245 mg daily (tenofovir disoproxil fumarate, TDF) was initiated. Following TDF treatment, the LP lesions showed significant clinical recovery. A follow-up PCR on November 8, 2022, demonstrated undetectable HBV DNA levels. The patient continues TDF therapy under regular monitoring.

Afterward, the patient was referred to an infectious diseases specialist in our clinic for further evaluation. In a subsequent test on September 28, 2023, HBsAg remained reactive (3769.2 S/CO), and anti-HCV remained negative (0.20 S/CO). During the initial 12 months of treatment, the patient had good adherence, as reported by self-reports and virological suppression on sustained occasions. There were no missed or interrupted doses. After the relevant treatment, on February 28, 2024, HBV DNA remained low at 3.6×10^2 IU/mL, confirming effective treatment but continued virological response. Throughout this period, the patient remained asymptomatic, with no LP recurrence.

However, due to financial considerations, the patient switched from the proprietary drug (tenofovir disoproxil fumarate, TDF) to a generic drug in August 2024. He used this generic formulation (300 mg daily) for approximately four months. On November 18, 2024, he presented to our clinic with recurrence of chen planus (LP) lesions (Figure 1). The patient reported regular use of the medication during this period, despite having made the switch independently without medical consultation. On this date, HBsAg test results showed a reactive result (3689.19 S/CO) as expected; however, PCR examination was not performed because of the patient's economic issues. No other medications, infections, or triggers were reported. Upon recurrence of all these, the patient was informed and the patient was treated again with proprietary drug as prescribed once-daily 245 mg. used for the first time. Following that, the latest April 2025 evaluation confirmed viral suppression with a negative HBV DNA PCR, and the biochemical analysis on April 7, 2025, liver enzymes (AST 37 U/L, ALT 44 U/L). Also, the patient was HBeAg-negative (0.29 S/CO). The HBV DNA test was performed using the artus® HBV RG PCR Kit (Qiagen, Germany), following nucleic acid extraction with the EZ1 Virus Mini Kit v2.0 (Qiagen, Germany). PCR was conducted on the Rotor-Gene Q Real-Time PCR instrument (Qiagen, Germany).

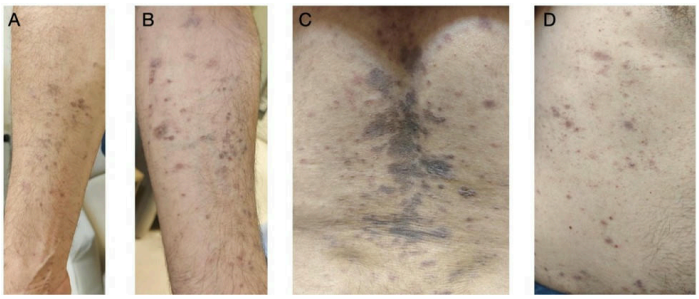

Figure 1. The clinical features of cutaneous lichen planus (A–D). (A, B) Multiple violaceous flat-topped papules and plaques are observed on the flexor surfaces of the forearms of a patient with localised cutaneous lichen planus. (C) Symmetrically distributed hyperpigmented violaceous plaques and papules on the upper back of a patient with generalised cutaneous lichen planus. (D) Disseminated erythematous to violaceous papules and red plaques on the lower waist, with evidence of active lesions of generalised lichen planus.

DISCUSSION

HBV has been linked to extrahepatic conditions, including chen LP, which is commonly associated with HCV. Recent studies show that HBV can also trigger LP in susceptible individuals. Thus, epidemiological data show that LP patients are more likely to be HBsAg-positive (4). In this case, the patient was serologically positive for HBsAg and HBV-DNA PCR, and this condition was progressive and persisted for more than six months, which indicates its chronification. Although the HBV DNA level was classified as low positive, it remained detectable, indicating ongoing low-level viral replication. This low-level viremia may be attributed to the antiviral effect of tenofovir disoproxil fumarate (proprietary drug), which suppresses viral replication but may not fully eliminate cccDNA reservoirs in hepatocytes (2). Therefore, the persistence of detectable HBV DNA, albeit at low levels, is consistent with the known pharmacodynamics of TDF and the natural course of chronic HBV infection under treatment. The presence of this intracellular viral reservoir can sustain HBsAg expression even when serum HBV-DNA is undetectable, potentially explaining the serological positivity observed in some chronic cases. Moreover, the stability and long-term persistence of cccDNA play a central role in the chronicity of HBV infection, acting as a continual source of viral transcription and immune stimulation (8).

Our patient also had complications involving extrahepatic conditions such as LP. These complications are driven by immune complex deposition, cytokine overproduction, and CD8+ T-cell activation. HBsAg may cross-react with basal keratinocytes, initiating T-cell-mediated apoptosis, a hallmark of LP (9). Chronic HBV infection causes sustained immune activation and elevated levels of proinflammatory cytokines such as TNF-α, IFN-γ, and IL-6, supporting a shared immunological basis for both HBV and LP. Although rare, these findings suggest that HBV may contribute to LP pathogenesis through immune dysregulation (10).

Furthermore, TDF, a first-line treatment for chronic HBV, was initiated. Although generally effective, TDF has rarely been linked to lichenoid drug eruptions (11, 12). Our patient's LP lesions improved with TDF, supporting the theory that LP was HBV-related. On the other hand, switching to a reformulated tenofovir increased LP lesions and HBV viral load, highlighting the importance of formulation consistency. Even though bioequivalence is anticipated in the generic drugs of tenofovir, irregular manufacturing and a lack of regulation in some areas can impact pharmacologic efficacy or immunologic modulation. It has been proven that certain excipients, dissolution characteristics, or inadequate dosing in generic antiretrovirals may affect drug-resistant development in chronic viral infections and the therapeutic effect (13). Although viral suppression was preserved in this instance, the recurrence of LP lesions following a change to a generic formulation might underlie subtle alterations in drug metabolism or systemic immune stimulation, and further investigation is indicated. This case underscores the significance of drug formulation quality and the need for further research into the HBV-LP relationship (14).

Although viral suppression was preserved, the recurrence of LP lesions following the switch to a generic formulation indicates that even minor changes in the pharmaceutical composition may affect immune regulation. In immune-mediated dermatologic conditions such as LP, formulation consistency plays a critical role, as small differences in excipients, dissolution rates, or bioavailability may influence cytokine responses or T-cell activation. Several studies have reported that such variations in generic antiviral formulations can impact treatment stability, immune modulation, and the risk of flare-ups in chronic viral infections (15, 16). Therefore, in patients with HBV-related immune complications, maintaining pharmaceutical uniformity is essential to ensure both antiviral efficacy and immunologic control.

In summary, this case highlights the significance of pharmaceutical formulation in achieving and maintaining therapeutic response. Notably, the patient showed complete virological (HBV DNA PCR negative) and serological (HBeAg negative) response with the proprietary drug of tenofovir, while the generic drug substitution was associated with clinical and laboratory deterioration. These observations underscore the need for stringent quality control in generic antiviral formulations, particularly in immunologically complex chronic infections such as HBV.

CONCLUSION

This case report explores the potential role of the HBV in causing LP through immune mechanisms. LP lesions improved with antiviral treatment but recurred with a drug formulation change, emphasising the importance of formulation consistency. This case contributes to the growing evidence that HBV may cause LP in susceptible patients and highlights the need for further research on the HBV-LP relationship. Clinicians should consider immune modulation and antiviral treatment quality to prevent complications.

Data Availability Statement	The data that support the findings of this study are available from the corresponding author upon reasonable request.
Informed Consent	Written informed consent was obtained from the patient for inclusion in this case report. The authors declare no conflicts of interest related to ethical issues.
Peer Review	Externally peer-reviewed.
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