

Lichen Planus Associated with Viral Hepatitis C: A Case Report

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Abstract

Introduction: Lichen planus (LP) is an immune-mediated inflammatory disease affecting the skin, nails, and mucous membranes. Its etiology remains unknown, but there are several well-recognized trigger factors, including viral and bacterial antigens, as well as drugs and metals. The prevalence of hepatitis C virus (HCV) infection is the highest among patients with LP. It has been suggested that HCV may contribute to the development of LP, but the relationship between the two is not fully understood. It is still controversial whether HCV leads to LP directly through replication within infected cells or indirectly through the activation of immunological mechanisms. Molecular studies have identified HCV RNA in samples from patients with LP. An autoimmune theory has also been proposed, given that several studies have identified viral replication and activation of the immune response associated with the synthesis of autoantibodies.

Case Presentation: We present a clinical case of a rare morphological form of LP against the background of HCV, clearly illustrating the relationship between these diseases.

Conclusion: The study of the relationship between LP and HCV is necessary to understand the pathogenesis of LP, since this dermatosis is an urgent problem in modern dermato-venerology. Apparently, skin lesions result from an immune response to viral components and are not a direct result of HCV.

Keywords: Lichen planus, Hepatitis C virus, Epidemiology, Case report

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Introduction

Lichen planus (LP) is a chronic T-cell dermatosis of unknown etiology that affects the skin, mucous membranes, and nails (1). One of the main histopathological signs of LP is vacuolar degeneration of keratinocytes in the basal layer. This phenomenon results from the action of T-helper

lymphocytes, T-cytotoxic lymphocytes, natural killer cells, and dendritic cells, which predominate in the inflammatory infiltrate. Thus, the main pathogenetic mechanisms are increased apoptosis of keratinocytes and inhibition of apoptosis of T-lymphocytes (2). The factors leading to the launch of these violations are still unknown.

Mokni et al. were the first to notice the relationship



Figure 1: Rash in the perianal area.

between hepatitis C virus (HCV) and LP in 1991 (3). Three years later, other cases of LP due to hepatitis C were reported, and these studies were published shortly after the discovery of HCV in 1989 (4)

It is believed that LP is associated with certain pathological conditions such as autoimmune diseases, malignant neoplasms, stress, and viral infections, the most significant of which is viral hepatitis C (5).

Case Presentation

A 46-year-old citizen of Kazakhstan sought the consultation of a dermatologist on August 27, 2021, complaining of formations on the skin in the perianal region and changes in the nail plates of the hands and feet.

Medical history: The formations on the skin in the perianal region were noticed about six months ago. The change in the nail plates of the feet was noted over several years, and the change in the nail plates of the left hand was noted within several months. The patient could not recall any specific events that led to the pathological skin process, which had not healed on its own.

Life history: In 2013, hepatitis C was diagnosed; the route of infection, in the patient's words, was unknown, and treatment was not carried out. Tuberculosis, sexually transmitted diseases, and HIV infection were denied. The patient's relatives had no skin diseases.

Objective status: The patient had a height of 170 cm, a weight of 62 kg, and a body temperature of 36.7 °C. The blood pressure was 120/70 mmHg, with a pulse rate of 75 beats/min. The heart sounds were clear and rhythmic, and the lung examination revealed vesicular breathing without wheezing. The abdomen was soft and painless. The tongue was coated with a white coating. The liver was palpated along the edge

of the costal arch, while the spleen was not palpable. Pasternatsky's symptom was negative. Physiological functions were normal.

Local status: The pathological skin process was limited, confined to the skin of the perianal area, represented by hyperpigmentation with clear boundaries, against which pinkish nodes were located, up to 1.0 cm in diameter, irregular in shape, with elastic consistency and single cracks on the surface (Figure 1). On the skin of the right buttock, there was a focus of pigmentation with mild peeling; there was no infiltration in the foci (Figure 2). The nail plates of the feet and left hand



Figure 2: Rash on the skin of the buttocks.

were partially destroyed, appearing yellowish with black blotches (Figure 3). In the interdigital spaces of the feet, there was erythema and desquamation; on the skin of the dorsum of the left hand, there was erythema with indistinct borders and poorly expressed desquamation. The mucous membrane of the oral cavity was free from rashes.

Laboratory and instrumental examination: The PCR of HCV RNA was positive, though the viral load was low (120 IU/mL). The biochemical blood tests revealed alanine transaminase 51 U/L, aspartate aminotransferase 91 U/L, gamma-glutamyl transpeptidase 80 U/L, total cholesterol 9.5 mmol/L, and triglycerides 0.85 mmol/L. Antibodies to HIV, syphilis, and hepatitis B were not detected. Samples scraped from the surface of formations on the skin in the perianal area were not positive for HPV DNA (14 types). Scraping for mushrooms from the nail plates of the hands and feet revealed the presence of fungal mycelium. Ultrasound of the abdominal organs showed diffuse changes in the liver and pancreas. Fibroelastometry revealed a fibrosis score of 0 (5.3 kPa).

Histological examination of a biopsy was reported as follows: “A fragment of skin biopsied within the reticular layer of the dermis is covered with stratified

squamous epithelium with hyperkeratosis and large thin pointed acanthotic strands of the saw-teeth type. The granular layer is preserved. In the basal layer, some of the cells contain vacuoles. In the zone of the epidermal-dermal junction and in the upper layer of the dermis, a strip-like infiltrate, consisting mainly of lymphocytes and histiocytes, penetrates into the lower layers of the epidermis, blurring its borders. The infiltrate contains scattered cells containing brown pigment granules, eosinophils. Conclusion: Morphological changes correspond to the verrucous form of lichen planus” (Figure 4).

Based on the clinicopathologic correlation, a diagnosis of hypertrophic lichen planus, mycosis of the nails, and chronic hepatitis C was made. Due to the increased level of transaminases, the following topical therapy was chosen to start with: 0.25% beclomethasone dipropionate cream, 1% gentamicin cream, and 10% clotrimazole cream, applied twice a day to clean, dry skin in the area of rashes (in the perianal area, on the skin of the hands, feet, and buttocks); a solution of 2% sertaconazole was applied bidaily to the nail plates of the hands and feet (including those not affected), along with antimycotic treatment of the shoes daily. The patient was referred to an infectious disease specialist to



Figure 3: Changes in nail plates and rashes on the skin of the hands.

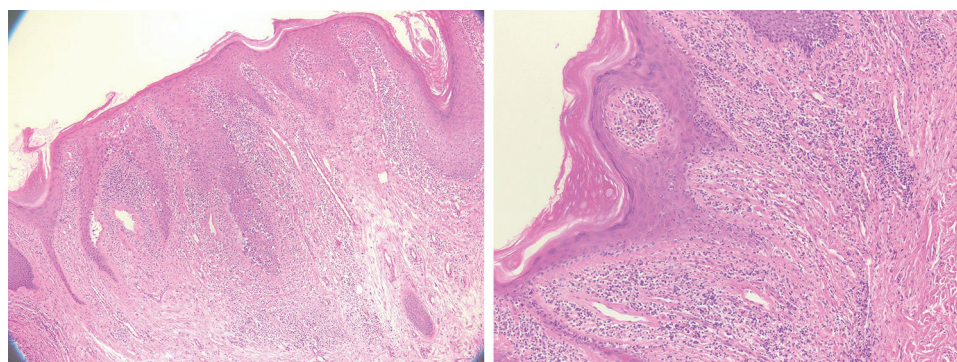


Figure 4: Histological examination.

resolve the issue of antiviral treatment.

Discussion

Although many studies have observed a link between LP and HCV, the exact mechanisms of their interaction are still unknown. Several theories draw attention to various factors that can contribute to the development of lesions on the skin and mucous membrane in LP.

1. Replication of Hepatitis C Virus in Keratinocytes

Although hepatocytes represent the main site of HCV replication, viral replication has also been detected in other tissues and organs (6). P. Lazaro et al. conducted a study among patients with chronic HCV without LP (group 1), patients with LP and HCV (group 2), and patients with LP without hepatitis C (group 3). Biopsies were taken from all patients for examination. Viral RNA was detected in keratinocytes in 69% of group 1 patients, in all patients of group 2, and was not detected in group 3 patients (7).

2. Autoimmune Theory

Identifying autoantibodies in the blood serum of patients with manifestations of LP and HCV confirms the theory of an autoimmune process. G. Lodi et al. detected circulating antibodies against epithelial antigens in patients with viral hepatitis C and LP, but their role in the pathogenesis of LP was not shown (8). In the study of Łapiński et al., which involved patients with chronic HCV infection (25 of them were immunosuppressed), autoantibodies were found in the serum of 32.5% of immunocompetent and 16% of immunosuppressed patients. Antinuclear antibodies were most often detected (9).

3. The Role of the Immune Response

A recent study found that cytokines play an important role in the pathogenesis of LP, and the

occurrence of LP in patients infected with HCV is associated with the release of pro-inflammatory cytokines in response to the presence of the virus (10). Accordingly, Al-Mohaya et al. reported that tumor necrosis factor α (TNF- α) (-308G/A), TNF- β (+252A/G), and IL-10 (1082G/A, -819C/T and -592C/A) may be involved in the predisposition of the human body to the development of LP (11).

Farid et al. analyzed regulatory T cells in 58 patients with chronic viral hepatitis C, 30 of whom had immuno-mediated skin manifestations. Researchers found that individuals with skin manifestations had fewer regulatory T cells in peripheral blood than patients without skin manifestations (12).

Conclusion

This case is of particular interest, demonstrating the severe course of LP associated with viral hepatitis C. There are numerous epidemiological studies supporting the link between LP and HCV infection, with significant geographic variations suggesting genetic and environmental influences. With regard to the mechanisms underlying this association, several theories have been put forward, but none clearly explains the pathogenetic pathways involved. Most studies show that lesions are the result of an immune response to viral components and not a direct result of the virus itself.

Authors' Contribution

Study concept and design: Khryanin A.A. Analysis and interpretation of data: Sokolovskaya A.V., Bocharova V.K. Drafting of the manuscript: Khryanin A.A., Bocharova V.K. Critical revision of the manuscript for important intellectual content: Khryanin A.A., Sokolovskaya A.V.

Conflict of interest: None declared.

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