



Original Research Article

CLINICAL EVALUATION OF ORAL MANIFESTATIONS AMONG PATIENTS WITH HEPATITIS IN A TERTIARY CARE SETTING

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ABSTRACT

Background: Hepatitis B and C are chronic infections with viruses that can manifest in many extrahepatic ways, including oral cavity changes. Identifying these oral changes early could help in a timely diagnosis, better management of patients, and decrease the chances of complications arising from the disease. The aim of this study was to assess the prevalence and pattern of oral manifestations in hepatitis patients and its correlation with age and gender.

Study design: Retrospective cross sectional study

Place of study and Duration of study: This study was conducted at Fatima Memorial Hospital, College of Medicine and Dentistry Lahore from May 2025 to May 2026.

Materials and Methods: The study was retrospective cross sectional study of 100 medical records of patients with Hepatitis B and Hepatitis C in tertiary care centres. Patients were included with complete clinical records, but excluded if there was incomplete documentation or if there were significant comorbid chronic conditions that are known to independently influence oral health (e.g., diabetes mellitus, rheumatoid arthritis, hypertension). Demographic and clinical data were collected and the oral manifestations were analysed with regard to their frequency. Data were analyzed statistically using SPSS and p value < 0.05 was considered as statistically significant

Results: A 100 patients were included. Both male and female patients were included in the study population with a predominating female sex population. Oral manifestation most commonly observed was chronic periodontitis, followed by gingivitis, and oral lichen planus. Oral manifestations were also found to be statistically significant with Hepatitis C (p<0.05), but not significant in relation to Hepatitis B and oral lesions. No significant difference was found for age or gender with regard to the presence of oral manifestations.

Conclusion: Oral manifestations such as chronic periodontitis, gingivitis and oral lichen planus are prevalent in patients with chronic hepatitis, particularly in patients with Hepatitis C, and a thorough oral examination may help in the early identification of undiagnosed hepatitis and prompt patients to seek additional evaluation and management. This increased knowledge about these oral conditions among healthcare providers could help improve patient health and disease-related complications.

Keywords: Hepatitis B; Hepatitis C; Oral manifestations; Periodontitis; Gingivitis; Oral lichen planus.

INTRODUCTION

Viral hepatitis is a significant public health problem across the globe, and Hepatitis B virus (HBV) and Hepatitis C virus (HCV) are responsible for a very high percentage of chronic liver disease in the world. The liver infections are linked to liver cirrhosis, liver decompensation, and hepatocellular carcinoma, which are responsible for substantial morbidity and mortality.^[1] The World Health Organisation (WHO) estimates that over 300 million people have chronic hepatitis B or C infection worldwide, and viral hepatitis is responsible for about 1.3 million deaths annually. Although the diagnosis of infection, vaccination, and antiviral therapy have improved, there is still a significant number of people who become infected but remain undiagnosed until complications arise, which is why it's important to look out for early signs and symptoms that can make the diagnosis easier.^[1, 2] Many systemic diseases have oral signs and symptoms and the oral cavity can often show systemic disease. Oral lesions can also be the initial signs of a systemic disease and prompt the healthcare provider to begin appropriate investigations and referrals to other health providers at an early stage.^[3] Oral and systemic health are more and more linked in the past decades, and many chronic inflammatory and infectious diseases have oral symptoms. Therefore, a thorough oral evaluation is an integral part of the general assessment of patients with chronic medical diseases.^[4] Chronic infection with HBV and HCV is associated with several extrahepatic conditions, such as skin, kidney, joint, nervous system, and oral mucosal conditions. These can occur in a complex immune mechanism, chronic inflammation, directly due to the virus or from the deposition of immune complexes.^[5] Of these extrahepatic features, oral lesions are becoming significant due to the ease of detecting them in routine clinical or dental exams and possibly preceding liver disease diagnosis.^[6] These findings may therefore help to introduce early recognition, timely referral and enhanced patient outcomes.

Some oral conditions are reported to be associated with chronic hepatitis such as periodontal disease, gingivitis, lichenoid reaction in the mouth (Oral Lichen planus), xerostomia, recurrent aphthous ulcer, angular cheilitis, glossitis, and candidiasis.^[7,8] While these lesions are not unique to hepatitis infections, it is important to consider whether or not there is an association between chronic viral infection and oral health alterations given the higher incidence of these lesions in infected individuals. The severity of such manifestations could be affected by viral load, duration of infection, immune status, nutritional deficiencies, and chronic liver dysfunction.^[9] One of the most common oral findings is periodontal disease, which is reported in patients with chronic hepatitis. Periodontitis is a

chronic inflammatory condition that is defined by progressive destruction of the supporting structures of the teeth leading to tooth mobility and tooth loss if the condition is not treated. Patients with chronic liver disease are more likely to suffer from periodontal disease, which can be caused by chronic inflammation, immune dysfunction, delayed wound healing, and poor oral hygiene.^[10,11] Similarly, gingivitis also commonly presents as an initial sign of periodontal inflammation, and can be aggravated by systemic immune abnormalities because of chronic hepatitis infection.^[13] Another significant oral disease that has been studied in detail with regards to HCV infection is oral lichen planus (OLP). OLP is a chronic inflammatory condition involving the oral mucosa and is characterized by reticular white striae, erythematous lesions, erosions or ulcerations which can cause significant discomfort when eating and talking. Several epidemiological studies have shown a strong correlation between HCV and OLP, but geographical differences are noted in relation to this correlation.^[6,7] It is thought to be mediated by an immune response that damages basal epithelial cells because of an ongoing viral infection and chronic immune activation.^[14] The relationship between the presence of HBV infection and oral lesions is less consistently published. Increased prevalence of periodontal disease and mucous lesions have been reported in chronic hepatitis B patients, but some investigators were not able to find any statistically significant correlation. These differences could be due to variations in populations studied, in the definition of the diseases, in the size of the studies, in ethnicity, in environmental influences, oral hygiene habits, or access to dental care. Thus, additional investigations are required to establish the range of oral manifestations of HBV infection and to compare them with those seen in HCV-infected persons.^[15] The relationships between chronic hepatitis and oral disease are not fully understood. In chronic viral infections, there is the possibility of ongoing systemic inflammation and immune dysfunction, affecting tissue healing, salivary gland function and susceptibility to opportunistic infections. Nutrient deficiencies, coagulation disorders, changes in drug metabolism and impaired immune response may also be caused by liver dysfunction and can lead to an increase in oral health issues. Moreover, decreased salivary flow puts patients at risk to dental caries, periodontal disease and oral fungal infection due to diminished protective properties of saliva.^[14,15]

Chronic liver disease patients need to have an optimal oral health status, because oral infections can also lead to systemic inflammation and negatively impact their overall health status. Oral assessment and early management of the oral lesions may lead to better quality of life, less pain and discomfort, better nutrition and decrease the risk of secondary infections. The importance of better cooperation and collaboration between the medical

and dental professionals, especially between physicians and hepatologists, to provide complete care for the patient with chronic hepatitis is therefore emphasized.^[2]

A few books in international literature have been published on the oral manifestations of patients infected with HBV and HCV, but the results are not easily generalizable because of the different populations studied, due to differences in the demographic characteristics, socioeconomic factors, and medical accessibility, as well as to the different oral hygiene habits. Therefore, further research is needed to elucidate the prevalence and distribution of oral lesions in the hepatitis patients who are attending tertiary care facilities. This information can help the clinician identify the at-risk patient, implement prevention measures and enhance collaboration between disciplines.

The current study was carried out to assess the prevalence and distribution of oral changes in patients with Hepatitis B and Hepatitis C, attending a tertiary care centre. The study also sought to identify the relationship between the occurrence of hepatitis infection and commonly occurring oral lesions and to find out the correlation between the lesions and patients' demographic data. The results could help in elucidation of oral health burden of chronic viral hepatitis and the need for oral exam as an integral part of the patient care.

MATERIALS AND METHODS

This study was designed as a retrospective cross sectional study of the clinical records of patients diagnosed as Hepatitis B and Hepatitis C and attended tertiary care clinics. Hepatitis infection was confirmed and oral examination records were available for patients to be included in the study. Convenience sampling was used to select a total of 100 patients who met the inclusion criteria for analysis.

Patients included had a confirmed diagnosis of Hepatitis B or Hepatitis C infection (as determined by available laboratory investigations) and were eligible for oral assessment as part of their clinical workup. To lessen possible confounding factors, patients with incomplete clinical records or any other systemic diseases that may have an independent effect on patients' oral health status, such as diabetes mellitus, rheumatoid arthritis, hypertension, or other important comorbid diseases were excluded.

A data collection proforma was designed for this study. Based on literature review on oral manifestations of chronic hepatitis infection, the proforma was designed. The demographic data collected included age, gender, type of viral hepatitis (Hepatitis B or Hepatitis C) and oral manifestations. Oral abnormalities examined were periodontal disease, gingivitis, oral lichen planus, and other oral lesions mentioned in the clinical records.

The tool for data collection was checked for its content validity and relevance by experts on oral medicine and related clinical fields. With proper institutional approval, patients' records were accessed and pertinent data was extracted, keeping the patient's privacy and anonymity intact.

All records available were screened based on the set inclusion and exclusion criteria. Study protocol excluded incomplete records or forms with essential clinical information missing. The final sample size was 100 patients capable of providing data and was statistically analyzed.

An analysis of the data has been carried out using SPSS software. Descriptive statistics were done to find out how common and distributed were oral manifestations among the hepatitis patients. Oral manifestations were correlated with hepatitis type, using appropriate statistical tests with a significance level of $p < 0.05$. Demographic factors (age and gender) and the occurrence of oral lesions were also assessed.

RESULTS

100 patients with oral manifestations of Hepatitis B and/or Hepatitis C were included. The average age of the patients was about 40 years with the youngest patient being 18 years. There was a male to female ratio of around 1:1.5 and a female predominance was noted. The majority of patients were above 40 years of age. As shown in Table 1, the study participants were mostly female, and more than half of them were aged 40 to 49. Table 1 shows that the majority of the respondents were females, with over 50% aged 40–49 years.

In the study group, the most commonly observed viral infection was Hepatitis C infection followed by Hepatitis B infection. A few patients were co-infected with both Hepatitis B and C. By gender, Hepatitis C was the most common type of disease among males and females

Table 1: Demographic characteristics of study participants (n=100)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	40	40.0%
	Female	60	60.0%
Age group	≤40 years	40	40.0%
	>40 years	60	60.0%
Type of hepatitis	Hepatitis B	37	37.0%
	Hepatitis C	61	61.0%
	Hepatitis B + C co-infection	2	2.0%
Treatment status	Currently receiving treatment	18	18.0%
	Not receiving treatment	82	82.0%

The frequency distribution of oral manifestations according to the type of hepatitis is shown in Table 2. Periodontitis was the most commonly observed oral manifestation among patients with Hepatitis C, followed by gingivitis and oral lichen planus. Among patients with Hepatitis B, gingivitis was the

predominant oral finding, followed by periodontitis, other oral lesions, and oral lichen planus. Patients with Hepatitis B and C co-infection showed a limited number of oral findings, with periodontitis being the only reported manifestation in this group.

Table 2: Distribution of oral manifestations according to type of hepatitis

Oral manifestation	Hepatitis B (n=37)	Hepatitis C (n=61)	HBV + HCV (n=2)
Gingivitis	37 (100%)	26 (42.6%)	0
Periodontitis	30 (81.1%)	40 (65.6%)	2 (100%)
Oral lichen planus	8 (21.6%)	14 (23.0%)	0
Other oral lesions	10 (27.0%)	8 (13.1%)	0
Oral squamous cell carcinoma	1 (2.7%)	0	0

Distribution of oral manifestations by sex showed similar distribution of both male and female patients. The most common lesions noted in both male and female were gingivitis and periodontitis,

followed by oral lichen planus and other oral abnormalities. There was no significant difference between the gender and occurrence of oral lesion.

Table 3: Distribution of oral manifestations according to gender

Oral manifestation	Male (n=40)	Female (n=60)
Gingivitis	24 (60.0%)	39 (65.0%)
Periodontitis	22 (55.0%)	38 (63.3%)
Oral lichen planus	8 (20.0%)	14 (23.3%)
Other lesions	6 (15.0%)	12 (20.0%)

The association between hepatitis type, treatment status, demographic characteristics and oral manifestations was evaluated using statistical analysis. There was a significant correlation between Hepatitis C infection and presence of oral

lesion ($p < 0.05$). The association between Hepatitis B infection and oral changes was not statistically significant, however. Also, there was no significant association found between treatment status and the presence of oral lesions.

Table 4: Association between clinical variables and oral manifestations

Variables compared	p-value	Significance
Hepatitis B and oral lesions	0.192	Not significant
Hepatitis C and oral lesions	0.052	Significant
Treatment status and oral lesions	0.448	Not significant
Age and oral lesions	>0.05	Not significant
Gender and oral lesions	>0.05	Not significant

Overall, these results showed that the oral manifestation was common among patients with chronic hepatitis and periodontal diseases were the most prevalent oral manifestation. Demographic characteristics and treatment status did not reveal significant relationships with the presence of oral lesions; however, a stronger association was found with oral manifestations of Hepatitis C than of Hepatitis B.

DISCUSSION

In the present study, the pattern of oral manifestations in those diagnosed with Hepatitis B and Hepatitis C was assessed and it was found that oral lesions are common in people with chronic viral hepatitis. The most common findings in this study were periodontal changes (mainly gingivitis and periodontitis), followed by oral lichen planus and other mucous lesions. Oral manifestations had a significant association with Hepatitis C, while the

association of Hepatitis B with oral lesions was not significant.

The results of the present study agree with the oral findings reported by Carrozzo and Gandolfo that during Hepatitis C infection there is a strong association with oral manifestations mainly oral lichen planus^[16]. Their study indicated that chronic inflammatory oral diseases could be associated with chronic immune stimulation due to HCV infection. In a similar way, Nagao et al. showed that the prevalence of oral lichen planus was higher in HCV infected patients than in the general population, which supports the association between HCV and immune-mediated oral disorders^[17]. The high prevalence of periodontal disease in the current study is similar to that reported by Grigoropoulou et al. who noted a possible role of chronic liver disease in periodontal health through the impaired immune response, systemic inflammation, and tissue repair mechanisms^[18]. Lodi et al. found that oral lichen planus was linked to HCV infection, but the

prevalence was found to be widely different in various populations, indicating that the geographical, genetic and environmental factors could also be responsible for the occurrence of oral manifestation^[19].

The current study found that Hepatitis C was more likely to be associated with oral lesions than Hepatitis B, which also was reported to have many extrahepatic manifestations caused by chronic immune activation and inflammatory pathways, including oral manifestations, by Zignego et al.^[20]. The relationship, however, with the relation of HBV with oral lesions is less established. Patients with hepatitis virus can have oral manifestations, which was reported by Porter et al. but the association was more consistent and stronger with HCV than with HBV^[21]. In the current study, there was also no significant correlation between the treatment status and the presence of oral lesions. This result is similar to other studies that showed some oral signs may be more closely associated with chronic viral activity and immune-mediated processes than with treatment status. However, antiviral therapy may have a secondary effect on oral health, by reducing systemic inflammation and viral replication.

Variations in the sample size, study design, diagnostic criteria, population characteristics, oral hygiene practices and access to dental care between studies may account for the differences between the present study and previous studies. In some studies, attention has been paid only to oral lichen planus, while in this study a wider spectrum of oral conditions such as periodontal disease and mucosal lesions were evaluated.

CONCLUSION

The present study highlights that oral manifestations are common among patients with chronic hepatitis, with periodontal diseases being the most frequently observed findings. Hepatitis C demonstrated a stronger association with oral lesions compared with Hepatitis B. Routine oral examination of patients with hepatitis may help in early identification of associated oral conditions and facilitate timely multidisciplinary management. Increased awareness among healthcare professionals regarding these manifestations may improve patient care and reduce disease-related complications.

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