

Review**Management of patients with hepatitis C infections in Dental Clinic**Namita¹, Karan Saggar², Veenu Gupta³, Deepinder Chhina³, Rita Rai¹¹Professor, Department of Dentistry, Dayanand Medical College and Hospital.²BDS, BJS Dental College, Ludhiana ³Professor, Department of Microbiology Dayanand Medical College and Hospital.**Abstract**

Hepatitis C virus (HCV) infection is the main cause of chronic liver disease and liver related morbidity and mortality worldwide. Health-care workers have an occupational risk of infection with hepatitis B virus (HBV) and hepatitis C virus (HCV). There is still widespread misunderstanding about HCV transmission, infectivity, management and prognosis. Therefore, in providing effective dental care to people infected with HCV, understanding the virus and the potential health and dental health problems associated with hepatitis C infection is the first step. Oral clinical manifestations can be observed, such as bleeding disorders, jaundice, fetor hepaticus, xerostomia, lichen planus, Sjögren's syndrome and sialadenitis. The present paper highlights some of the important oral manifestations related to hepatitis C infection and their management and various post-exposure protocols that can be undertaken to minimize the risk of infection.

Key words: Dentists, Hepatitis C, Management, Transmission

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Article Received: 06-02-16**Accepted On: 03-03-2016****INTRODUCTION**

Infection with Hepatitis C virus (HCV) is the main cause of chronic liver disease^{1,2} and of liver-related morbidity and mortality worldwide.¹ Prevalence of hepatitis C virus is a major health problem in Punjab. It appears to be more common than HBV infection. The virus can cause long-term liver problems, including cirrhosis and hepato-cellular carcinoma (HCC). Despite a greater understanding of HCV infection, there is still no vaccine for HCV. There is still widespread misunderstanding about HCV transmission, infectivity, management and prognosis. Therefore, in providing effective dental care to people infected with HCV, understanding the virus and the potential health and dental health problems associated with hepatitis C infection is the first step. It is also important that issues of

infection control, prevention of disease transmission and the broader health implications of providing dental treatment for people with serious liver problems are properly understood. Hence, defining the probable routes of transmission and eliminating them is the only practical way to reduce HCV infection. Although the incidence of HCV infection is significantly lower than of HBV, the rate of chronically infected individuals is much higher; around 70% of those infected become chronic carriers.³ Hepatitis C virus (HCV), which causes the infection, is an RNA virus whose incubation period is about 6-7 weeks. The virus is contracted chiefly via the parenteral route, through blood product infusion or intravenous drug use. However, 30-40% of the infected patients have no history of such procedures. In these cases, the possibility of transmission during dental

procedures, ear piercing, tattooing, acupuncture and endoscopic biopsies should be considered.⁴ HCV infected patients have increased incidence of xerostomia, multiple dental caries, periodontal disease, bleeding tendency and pale mucosa. Due to this, these patients suffer from low self-esteem. Therefore, there is a need for routine dental check-up to maintain oral health while observing great caution during surgical procedures to maintain hemostasis and prescribing drugs. One of the best ways to reduce the spread of HCV from patients to HCW and vice-versa is to follow the standard precautions during care and treatment of HCV patients.

Transmission

Hepatitis C is a blood-borne virus. Food, water or casual contact are not methods of transmission of HCV,⁵ and it is well established that the primary risk factor for HCV transmission is exposure to infected blood.⁶ Hepatitis C virus is present in the blood, serum, plasma, saliva, menstrual and vaginal discharge, seminal fluid and occasionally, urine of infected persons. The main modes of transmission are reusing syringes and needles and injecting drugs, exposure to unsterile tattooing or body piercing, via a penetrating injury such as a needle-stick injury, cross contamination from dialysis circuits, unscreened blood and blood products, use or reuse of unsterilised tools in traditional scarification and circumcision practices.⁷⁻⁸ The risk of HCV transmission by sexual contact is considered low but increased if co-infected with HIV.⁸ Transmission of the HCV by saliva alone is a remote possibility unless saliva is contaminated with blood.⁹ Household transmission via razors or toothbrushes is considered rare but these items should not be shared due to the considering the possibility of blood contamination.⁸ Vertical transmission from mother to child occurs in 5% of cases.¹⁰ Breastfeeding should not be discouraged and is regarded as safe, unless cracked nipples allow blood contact.¹¹ HCV is one of the common causes of occupational diseases transmitted from patients to health care workers (HCWs) and vice versa, and also to HCWs' families.¹² It has been estimated that 1.4% of hospital workers are infected with HCV.¹³ As a serious problem in a number of developing countries, dental treatments are performed by unqualified dentists. The results of some previous

reports identified increased infection risk of patients receiving treatment by this group.¹⁴ HCV- RNA has been detected intra-orally also. HCV-RNA has been detected in saliva and in salivary glands from patients with sialadenitis.¹⁵ Most HCV patients (77%) had higher HCV RNA levels in their gingival sulcus than in their saliva.¹⁶ Leao et al. found HCV-RNA in tooth brushes used by hepatitis C patients.¹⁷

Oral manifestations of hepatitis C infection

Hepatitis C patients suffer from various oral conditions. People with hepatitis C are prone to tooth decay, suffer loss of self-esteem due to poor oral aesthetics and have difficulty with diet due to poor oral health, all leading to a compromised quality of life. This raises a need for special consideration for these patients during dental management. An effective preventive care program for the patient diagnosed with Hepatitis C is the most important goal for dental practitioner.¹⁸ Manifestations in the oral cavity include lichen planus, Sjögrens syndrome, and sialadenitis, xerostomia and some forms of oral cancers may also be seen.¹⁹ Furthermore, cirrhotic patients may have thrombocytopenia due to hypersplenism or treatment with interferon. In patients with liver disease, the resultant impaired hemostasis can be manifested in the mouth as petechiae or excessive gingival bleeding with minor trauma.²⁰ Prior to treating HCV it is important that any active dental disease be managed. Non- urgent dental treatment may need to be postponed until HCV treatment ceased. In patients with acute-phase viral hepatitis, only emergency treatment should be considered. Surgery is contraindicated in patients with certain conditions such as acute hepatitis, acute liver failure or alcoholic hepatitis.²¹

Oral lichen planus (OLP)

Lichen planus is a chronic mucocutaneous disease more commonly seen in middle-aged women and affecting up to 1-2% of the population.²² The diagnostic criteria for OLP are based on clinical and histopathologic features of the condition. Emotional stress, immunological disturbances, neurological dysfunctions, and viruses are possible etiological factors.^{4, 23} Some authors suggest that patients with OLP should undergo screening tests for HCV infection.²⁴ Betamethasone ointment should be applied sparingly to lesion twice a day after meals.²⁵

Salivary gland disorders

The main salivary gland disorders associated with HCV infection are xerostomia, Sjögren's syndrome, and sialadenitis.

Sjögren's syndrome and Sialadenitis

Hepatitis C virus is thought to cause a syndrome with features similar to Sjögren's syndrome (SS) in a proportion of infected individuals.^{2, 26} The dental implications of this disease process are related to the effects of hyposalivation. Investigations of HCV-associated sialadenitis and SS is complicated and should be left to medical specialist.

Xerostomia/Dry Mouth

Studies have shown that there is an increased incidence of dry mouth in patients with HCV infection, especially those patients on antidepressants, in addition to the known effects of HCV on salivary glands.¹⁸ Saliva has roles of lubrication, cleaning, buffering, remineralisation, moisturizing, immunological defence against bacteria and initiation of digestion. Its depletion may result in dental caries, altered taste, burning sensation in the mouth, candidiasis, halitosis, difficulty in chewing, swallowing and talking, difficulty in wearing dentures, dry mouth and lips. Due to xerostomia and the poor dental health, multiple dental caries is common finding in these patients.²⁷

Management

It is aimed at the prevention of damage to the dentition, improving symptoms and increasing salivary flow and includes:

Patient education

- On oral hygiene techniques including regular tooth-brushing and flossing
- Avoid using mouthwash containing alcohol, use a pH balanced oral rinse
- Use of fluoridated dental products including mouth-rinses and toothpastes
- Maintaining optimal denture hygiene by regular brushing and soaking in chlorhexidine or dilute bleach solution
- Encourage smoking cessation and a reduction in intake of coffee and tea.

Professional care

- Regular dental examinations
- Fluoride supplementation is important and may involve the use of a prescription-strength neutral fluoride gel in custom-

made fluoride trays depending on the reduction of saliva and degree of caries risk

- Management of candidiasis with topical agents, avoiding those containing sugar if dentate.
- Medications may increase dryness; changing medications or altering the dose (if possible) may improve dryness

Another factor implicated in poor oral health associated with hepatitis C infection was the use of methadone medication. It was observed that people on methadone medication who presented with decayed teeth predominantly had root caries with many subgingival lesions.¹⁸

Liver disease in HCV

Hepatitis C may cause liver damage with a corresponding reduction in liver function. The most important liver functions that have implications in the provision of dental treatment by dental healthcare providers are drug metabolism and production of clotting factors (V, VII, and IX, X, prothrombin and fibrinogen). Liver disease is often associated with a reduction in clotting factors, which results in an impaired haemostasis. In patients with liver disease, the resultant impaired hemostasis can be manifested in the mouth as petechiae or excessive gingival bleeding with minor trauma. This is especially suggestive if it occurs in the absence of inflammation.

Management

All patients should have a detailed medical history taken and the dentist should consult with the patient's medical practitioners to ensure that a safe and appropriate dental treatment plan is established in light of the liver dysfunction. A detailed clinical evaluation involving extra-oral and intra-oral examinations may pick up signs of liver disease.¹⁹ Invasive treatment should be avoided for patients with acute liver failure and acute hepatitis. Emergency treatment should be provided in a hospital setting. In addition to the medical complications arising from liver disease, problems in the delivering dental care also exist for those undergoing antiviral therapy. Drugs such as interferon, ribavirin and corticosteroids may lower the resistance to infection and cause bleeding, so non-urgent invasive dental treatment should be postponed until therapy has ceased. If invasive treatment is planned, the following blood tests may be required:

- Complete blood exam
- INR (> 1.7 indicated a serious risk of bleeding for a non-warfarinised patient).²⁸
- Coagulation tests (prothrombin time, activated partial thromboplastin time)
- Liver function tests (Aspartate aminotransferase (AST) and Alanine aminotransferase (ALT))

If test results are significantly abnormal then any dental treatment must be provided only after consultation with either the relevant medical specialist, or by referral to a dental specialist in oral medicine or oral and maxillofacial surgery. Local haemostatic measures may be necessary, including compression, sutures, dressings such as oxidised cellulose, and antifibrinolytic agents such as tranexamic acid. Vitamin K therapy may be necessary. Where immune impairment is present, antibiotic prophylaxis may be necessary.¹⁹ During surgical intervention, surgical trauma should be minimised.²⁹ Immunocompromised patients, particularly those with neutropenia, are at risk of sepsis. Special precautions must be taken if the patient is anemic, coagulopathic or thrombocytopenic. Pre-treatment optimisation and comprehensive post-operative care may be required.

Drugs Used-Drugs should be prescribed with great caution. As the liver is in highly compromised state, the drugs that are metabolized primarily by liver may cause complications. Dental drugs metabolized primarily by the liver:

- Local anesthetics-(Lidocaine, Mepivacaine, Prilocaine, Bupivacaine)
- Analgesics-(Aspirin*, Codein**, Ibuprofen*, Acetaminophen)
- Sedatives-(Diazepam**, Barbiturates **)
- Antibiotics and Chemotherapeutics-(Ampicillin, Tetracycline, Metronidazole ***)

* limit dose or avoid if severe liver disease (active hepatitis and cirrhosis) or hemostatic abnormalities present

** limit dose or avoid if severe liver disease (active hepatitis and cirrhosis) or encephalopathy present, or taken with alcohol

*** avoid if severe liver disease (active hepatitis and cirrhosis) present.³⁰

Caution should be observed while prescribing non-steroidal anti-inflammatory drugs (NSAIDs) in patients with liver disease, as there is increased risk of gastrointestinal bleeding and gastritis usually associated. Authors such as Douglas et al. describe acetaminophen as a safe alternative to aspirin or NSAIDs that can be administered at doses of up to 4 g/day during two weeks without adverse liver effects, warning patients to avoid alcohol consumption while receiving treatment with the drug. In patients using benzodiazepines, the dose should be lowered, with prolongation of the interval between doses. Local anesthetics are generally safe provided the total dosage does not exceed 7 mg/kg, combined with epinephrine³¹.

Avoiding Discrimination

Hepatitis C is a highly stigmatised condition and many people living with the disease experience discrimination. Behaviours which reflect stigmatisation of a patient can also reduce the standard of healthcare received and lower the quality of life for people with hepatitis C and should be avoided. Healthcare workers should respect the rights of people with hepatitis C, regardless of how they were infected. Everyone living with hepatitis C should have access to care and services regardless of transmission route, gender, race, culture, sexual orientation or lifestyle issues. Discrimination and stigmatising behaviours can be avoided by ongoing health care worker education and continuing medical education, ensuring standard infection-control procedures, ensuring people's privacy and confidentiality.²⁷

Prevention and infection control

Standard Precautions- are recommended for the care and treatment of all patients and in handling of blood, all other body fluids, secretions and extractions (excluding sweat), regardless of whether they contain visible blood, non-intact skin and mucous membranes. It includes:

- Aseptic technique
- Hand washing
- Use of appropriate protective equipment gloves, gowns, plastic aprons, masks/ face shields and eye protection
- Appropriate reprocessing of instruments and equipment - heat-sterilizing hand

pieces between patients, biological monitoring of heat sterilizers.

- Implementing environmental controls.²⁷

Health care workers with hepatitis C- HCWs with hepatitis C should inform employer of their infection status and refrain from exposure prone procedure.²⁷

Management of exposure to HCV- Risk of hepatitis C transmission through needle stick injury depends on viral load of source patient, first aid administered and instruments involved.

At the time of exposure wash skin with soap and water and rinse mouth, nose and eyes with water or saline if exposed and report incident to workplace occupational exposure team. On exposure, test for anti HCV for source and baseline testing for anti HCV, LFTs must be carried. Follow up testing for anti HCV, LFTs and HCV RNA PCR at 4-6 weeks after exposure must be carried out. Currently there is no post exposure prophylaxis for Hepatitis C.³²

CONCLUSION

Hepatitis is the main cause of chronic liver disease and causing long term liver problems like cirrhosis and HCC. As there is no vaccine available for HCV, we need to have deep understanding about HCV transmission, infectivity, management and prognosis. Through this all the health care providers and workers would be able to render effective dental treatment to HCV patients. Dental treatment during anti-HCV therapy should be undertaken following consultation with medical specialists. Blood tests and further investigations in patient care may be required. Pre-treatment optimization and comprehensive postoperative care may be required. Particular attention must be given to hemostasis. Hence, it is safe to mention the following recommendations for viral hepatitis prevention in a dental setting:

1. Effort on increasing the level of knowledge in the general population regarding the infection risk of dental treatment by holding workshops and programs together with media
 2. Preventing unqualified dentists practicing in certain parts of the world and/or making them use infection prevention systems
 3. Monitoring hospitals' infection control systems
- Along with this the various standard precautions need to be implemented to help control the transmission and to avoid the discrimination with these patients.

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