

Research Journal of Pharmaceutical, Biological and Chemical Sciences

Hepatitis C and Dentistry in a Nutshell.

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ABSTRACT

Hepatitis C virus (HCV) is the most common chronic blood borne infection similar to Hepatitis B. Most of the estimated people infected with HCV are chronic carriers who are at an increased risk for chronic liver disease. Recent studies have shown dental treatment can be included among the risk factors of HBV and HCV infection. And this risk can easily be eliminated using standard precautionary measures but unfortunately, many studies also show that knowledge regarding HCV is less among dentists.

Keywords: Hepatitis C (HCV), Dentists, Infection control, dental procedures.

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INTRODUCTION

Hepatitis B infection is the most important infectious occupational hazard in the dental profession. Dentistry as a profession has come a long way and is doing many things to prevent the spread of infectious diseases. Hepatitis C virus (HCV) is also recognized as a disease of global importance.[1] More than 170 million people are chronically infected, and the disease can lead to the same adverse outcomes as in the case of HBV.[2] 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] To date, there is no available vaccine for HCV prevention and developing such a vaccine in the near future seems farfetched. Hence, defining the probable routes of transmission and eliminating them is the only practical way to reduce HCV infection.[3-5] In the USA, the prevalence of HCV infection is estimated to be higher than that of infection with human immune deficiency virus (HIV) or even HBV.[6] In last two decades, HBV, HCV & HIV co-infection has emerged as a leading cause of morbidity throughout the world.

The transmission of Hepatitis C virus can occur via improper handling and cleaning of dental instruments. However, the hepatitis C virus transmission occurs through blood and equipment not viewed as a risk may in fact be harbouring the virus. Although the risk is small it is a proven source of infection.[7] Periodontal disease, severity of bleeding and bad oral hygiene were associated with the risk of HBV & in a study in Egypt, patients with periodontal disease showed higher rate of HBsAg, anti HBc, anti HCV or both anti HCV and/or anti HBc in whole unstimulated saliva than the controls.[8]

Till now, no undisputed case of HCV saliva transmission has been documented. However, the existence of other routes of transmission similar to HBV is possible.

- HCV-RNA has been detected in saliva and in salivary glands from patients with sialadenitis.
- Most HCV patients (77%) had higher HCV RNA levels in their gingival sulcus than in their saliva.[8]

Leao et al [9] found HCV-RNA in a tooth brushes by hepatitis C patients. This fact could be a theoretical risk of infection by sharing these objects by their household members.

A recent Italian has shown that the only demonstrable risk factor in 9% of acute C/NANB hepatitis is dental treatment. There are no data on direct contamination by Hepatitis C Virus of dental surgeries. Possible environmental contamination by Hepatitis C Virus-RNA was investigated in dental surgeries after treatment of anti-Hepatitis C Virus and Hepatitis C Virus-RNA positive patients.[10]

In one examination of 328 samples collected from work benches, air turbine handpieces, holders, suction units, forceps, dental mirrors and burs showed that 6.1% were positive for Hepatitis C Virus RNA and that if sterilization and disinfection are inadequate there is the possible risk of transmission to susceptible individuals.[11,12] The presence of Hepatitis C Virus-RNA was determined by polymerase chain reaction (PCR). [10]

Lock and coworkers [13] demonstrates a contamination with HCV-RNA of a considerable portion of toothbrushes used by hepatitis C patients. Dentists were in a high risk of contracting this disease due to the procedures and instruments of dental treatment. Since dentists have numerous patients and are exposed to blood, they are likely to have the maximum risk. Anti hepatitis C virus was found in 4 (9.3%) of 43 oral surgeons compared to 4 (0.97%) of 413 other dentists.[12] Dentists are at increased risk for hepatitis C infection.

But, studies [14-15] have shown that knowledge regarding the HCV is low among dentists compared to HBV.

Transmission and Symptoms:

Risk factors that have been associated with transmission of HCV and the following people will be at a higher risk to acquire HCV:

- Recipients of multiple blood transfusions.
- People with congenital coagulopathies and other conditions requiring repeated transfusion of blood products.
- Drug addicts
- Hemodialysis patients and staff.
- Renal transplant (immunosuppressed) patients
- Certain health care workers
- People with no history of parenteral exposure (20%)
 - Sexual transmission
 - Familial transmission (infrequent)

About 80% of infected individuals will have no clinical symptoms of HCV. Symptoms that may occur include jaundice, fatigue, dark urine, abdominal pain, loss of appetite, fever, clay-coloured stool, joint pain, and nausea, and vomiting.[16]

Dental Management [17]

- Patients with a history of hepatitis must be managed as they are potentially infectious
- According to American Dental Association recommendation all dental health care workers should be vaccinated against hepatitis B.
- No dental treatment other than urgent care (absolutely necessary work) should be rendered for a patient with acute viral hepatitis
- Aerosols should be minimized and drugs metabolized in the liver should be avoided as much as possible in patients with liver cirrhosis. If surgery is necessary a preoperative evaluation should be obtained.

List of drugs used in dentistry which are metabolised primarily in the liver are:[8]

Group	Drugs
Local anaesthetics ^a	Lidocaine Mepivacaine Prilocaine Bupivacaine
Analgesics	Aspirin * Codeine ** Ibuprofen * Acetaminophen
Sedatives	Barbiturates ** Diazepam **
Antibiotics & chemotherapeutics	Ampicillin Tetracycline Metronidazole *** Vancomycin ***

a - Appear safe for use during liver disease when used in appropriate amounts

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

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

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

Post exposure Management

Post exposure protocols for exposures to blood should include considerations for HCV exposure. Source patient testing to determine if exposure to HCV has occurred is an important element of the exposure follow-up. Early identification of infection presents an opportunity for early identification of chronic disease and referral for appropriate treatment. Post exposure follow-up should be conducted by a qualified medical professional that is aware of current recommendations for testing and post exposure prophylaxis medication. As of this writing, no antiviral agents have been approved or recommended for use following an exposure to HCV-infected blood. Additionally, no vaccine is currently available for prevention of transmission.

Suggestions: [7]

Only heat is effective at killing HCV. That means the autoclave must be used & chemical cleaning agents are not effective when used alone. Wherever possible, disposable units should be used. This includes the sterile cartridges for the local anaesthetics and the needles, scalpel blades and discs for cutting tooth material, dental burs and brushes, and the metal bands that are used to help the matrix to place restorations which can cut into the gums causing bleeding.

All permanent hand pieces should be covered with a baggie. This baggie will catch the blood splattered by the high speed drill and then can be removed and properly disposed off as the blood can combine with the lubricant and it's very difficult to remove otherwise.

The water coolant that is used for the scaling and the high speed drill can become contaminated with bacteria. This is a concern for immune compromised patients and neither chlorination nor charcoal filtration reliably decontaminates the water.

CONCLUSION

Viral hepatitis is a major public health problem, occurring endemically in all areas of the world. The prevalence of the disease is influenced by numerous factors which may be able to modulate its onset. Dentists were in a high risk of contracting this disease due to the procedures and instruments of dental treatment. Hence, dentists and their staff should know well the risk of infection from their patients, the risk of cross-infection between patients, and the methods to overcome the infection.

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