# HEPATITIS IN DENTAL PRACTICE - A STUDY CONDUCTED ON 1498 PATIENTS

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## ABSTRACT

*The purpose of this study was to determine the carrier status of hepatitis B and C in those patients who were admitted in the surgical unit of Khyber College of Dentistry, Peshawar for the treatment of miscellaneous oral and maxillofacial pathologies, including fractures, cystic lesions, tumors, neurectomies, impactions and biopsies. All the patients were operated under general anesthesia and were screened for hepatitis B and C virus.*

*This is the retrospective study conducted from September 2002 to December 2004. There were 1498 patients. Out of these, 44 were diagnosed as positive for the viral pathology. Some infected patients presented with a known history of jaundice, blood transfusions, major and minor dental surgeries in the past. The percentage of patients positive for HBsAg & HCVAb was 1.66 and 1.26 respectively.*

**Key words:** *HBsAg, HCVAb*

## INTRODUCTION

Hepatitis can be caused by infection with five varieties of hepatitis viruses labeled A to E. The main types of hepatitis relevant here are B and C;1 which are blood borne. Types A & E are fecal born infections and do not posses a carrier state. The type of infection is specifically diagnosed by serological testing.[2,3]Hepatitis B is the chief risk to dental personnel but hepatitis C can also be transmitted during dental surgery.' The risk of hepatitis B is emphasized by its previous name, "syringe jaundice". In the past particularly countless patients were infected via improperly sterilized syringes and needles. The hepatitis B virus can also carry within it the "delta agent", which can cause a particularly virulent infection, Delta hepatitis infection is mainly transmitted by blood or blood products.' A new blood born virus hepatitis G has been detected in a group of high risk hospitalized dental patients who had liver disease.'

Presently HBV and HCV infections have increased to epidemic proportions in our community.[4] It is very common in our society and certain health care workers are at particularly high risk of acquiring the disease.6'7 Any abrasion on the skin provides a potential route for blood borne viral infections from patient to doctor, or vice-versa.' The risk is directly proportional to the physical contact and the immune status of the person affected. High-risk procedures carried out for the pro-longed periods, increase the chances of transmission of blood borne viral infections. The risk is mostly related to needle stick injuries or to conjunctival implantation of the virus through eye splashes.[9]

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The alarming situation created by the spread of this deadly virus is paradoxed with the fact that both HBV and HCV infections are easily preventable,[4] so this study was conducted to see the frequency of HBs-Ag & Anti-HCV antibodies among the patients operated in maxillofacial unit of *Khyber College of Dentistry.*

## PATIENTS AND METHODS

The study included 1498 patients, admitted to the Oral and Maxillofacial surgical unit of Khyber College of Dentistry during the period of September 2002 to December 2004. All the included patients were tested for hepatitis surface antigen and anti-HCV antibodies to find out the relative frequency of HBV and HCV infections. The pre-operative blood screening reports were available in the history sheets, which also included the check lists for the past history of jaundice, major general surgeries, minor/major oral and maxillofacial surgeries, root canal treatments, scaling/root plannings, blood transfusions and IV injections.

Out of 25 HBV infected patients, 2 patients presented with previous known history of jaundice, one patient for major general surgical procedure (under G.A), 5 patients for surgical and non-surgical dental procedures (under L.A) and nine patients with history of I/V injection.

Among 19 HCV infected patients, 2 patients presented with previous known history ofjaundice, 2 with major general surgical procedures (under G.A), 9 patients with history of dental surgical procedures (under L.A), one patient with family history of HCV infection and 13 patients with I/V injections.

Among 44 patients, 4 HCV infected patients were known cases ofviral pathology but surprisingly all HBV infected patients were diagnosed for the first time, viz. they were carriers. This study also shows that most of the infected patients belong to an age group of 10-20 yrs, (27.27%), then 20-30 yrs (25%), the 40-50 yrs (15.90%), and 30-40 yrs (11.36%). Thus the virus is infecting most of the patients during the vital age era. Results are shown in table 1 & 2.

TABLE 1

| **Total No. of patients** | **Total No. of infected patients** | **No. of male infected patients** | | **No. of female infected patients** | | **Relative %ages of HBV & HCV infected patients** | |
|---|---|---|---|---|---|---|---|
| 1498 | 44 | 32 | | 12 | | | |
| | | **HBV** | **HCV** | **HBV** | **HCV** | **HBV** | **HCV** |
| | | 21 | 11 | 4 | 8 | 25 | 19 |
| | **2.93%** | **2.13 %** | | **0.80 %** | | **1.66%** | **1.26%** |

TABLE 2: RELATIVE FREQUENCY OF HBV - HCV AND AGE DISTRIBUTION

| **Age group** | **HBs Ag** | | **Anti HCV** | | **Total** | **%age** |
|---|---|---|---|---|---|---|
| | **Male** | **Female** | **Male** | **Female** | | |
| 1-10 | | 1 | | 1 | 2 | 4.5 |
| 10-20 | 9 | 1 | 1 | 1 | 12 | 27.27 |
| 20-30 | 6 | 1 | 2 | 2 | 11 | 25 |
| 30-40 | 2 | | 1 | 2 | 5 | 11.36 |
| 40-50 | 2 | | 4 | 1 | 7 | 15.90 |
| 50-60 | 1 | 1 | 1 | 1 | 4 | 9.09 |
| 60-70 | 1 | | 1 | | 2 | 4.54 |
| 70-80 | | | 1 | | 1 | 2.27 |
| Total | 21 | 4 | 11 | 8 | 44 | 2.93 |

## DISCUSSION

Hepatitis is an occupational hazard to surgeons in practice who are at risk of acquiring hepatitis B and C from infected patients.[10] Personnel can be infected by potential exposure of mucosa, infected blood or blood contaminated saliva and by spatter of blood contaminated to eyes, mouth, or broken skin. Paper cuts from blood contaminated request forms could also transmit HB." Plain saliva also can be weakly infectious.[3,13] HBV infected blood products are more dangerous and can transmit infection in as little as 0.000001ml fluid, particularly when they contain the "e" antigen.[1] Many cases have followed needle prick injuries, injections and blood transfusions.

The carrier rate of HBV in the general population of Britain is 0.1-0.2%; while the rate among British dentists is double that in the general population. In USA, 20% of American oral surgeons have serological evidence of previous infection and one of the highest infection rates of all health workers. In the USA 2% of oral surgeons and 0.7% of general dentists were found to be anti-HCV positive in 1996. This compares with 21% of oral surgeons and 8% of general dentists who were HBV positive in the same group.[1]

Study conducted in Khyber Teaching Hospital, Peshawar on surgical patients shows that every 11th patient is a potential risk of transmitting the virus to the operating surgeons. This study also shows increased incidence of HCV in preoperative surgical patients:" however, this study revealed, almost every 34th patient, being operated for oral and maxillofacial surgery is a potential risk to the operating oral surgeon. The average number of daily out patients in the Khyber College of Dentistry is 150. The total number of patients visited the hospital in the stated period was 125700 patients. Ifevery patient who had been screened for HBS & HCV then these values may have been much higher than expected. Moreover it shows increased frequency of HBV as compared to HCV infection. A study conducted at Medical Department of Khyber Teaching Hospital regarding relative frequency ofHBV and HCV in patients of liver cirrhosis in NWFP also shows high frequency of HBsAg positive patients.'[4] Statistical data given by R.A CAWSON in his book" Essentials of oral pathology and oral medicine revealed that; " a dentist treats 20 patients a day, one hepatitis B carrier will be encountered every 7 working days". In our study 25 patients are HBV +ve (i.e., 1.66%) thus with the same frequency of exposure our dental surgeons will encounter 2.5 patients per week. The danger to dental staff can be seen from a case where death from hepatitis B of an unvaccinated male nurse occurred after being bitten by a mentally handicapped carrier.[1]

It is essential for a dentist to have active immunization. It is effective, safe and protects against both hepatitis B and delta infection. Immunization against hepatitis B also protects against the delta agent, and this strengthens the need for immunization.[1] Thus both HCV and HBV infections are preventable and to some extent curable. Therefore one must plan realistic, practical and cost effective guidelines to prevent the spread of this devastating disease in our community. [4]

The risk of hepatitis in dental practice can be decreased by wearing good quality gloves. The use of double gloves[13] can decrease the risk of needle pricks by up to 70%. [9] Similarly frequently changing the gloves, during exposure prone procedures can help the surgeons even further. [15] Conjunctival spillage of blood can be avoided by using eye shields, goggles or surgical helmet. Active immunization against HBV infection plays a vital role in preventing this deadly viral infection. [8] However vaccine has not yet developed against hepatitis C virus and as such, the risk of acquiring hepatitis C virus infection will continue. It can only be prevented by adopting the physical preventive measures.[10] Safe disposal of used instruments is also necessary. Disposal ofused needles in a hard-walled, leak proof and sealable container is necessary. [16]Handling the sharp dental instruments carefully are also mandatory and last but not the least; serological testing of all the patients under treatment as well as the operator must be done in order to prevent the spread to other persons.

## CONCLUSIONS AND RECOMMENDATIONS

The role of dentist and dental technicians regarding spread of hepatitis cannot be ignored in this part of the world. It is the responsibility of the dentist as well as the dental technician to follow basic principles of sterilization and disinfection. We recommend that health department should take mandatory steps to wipe off quackery from the field of medicine and dental surgery. During the dental practice the operators should remember that after wearing gloves, whatever is touched is contaminated, touch only what has to be

touched, clean and sterilize the instruments, protect surfaces and equipments that are not sterilized with disposable, single use covers or barriers and discard them after every appointment. Dentist should use disposable covers on portable items (e.g. curing lamp handles, amalgam mixers, plastic air water syringe tips) use paper towels, tongs or plastic baggie over gloves to briefly handle equipment or to open cabinets and drawers to get things not anticipated during setup. Scrub and disinfect non critical surfaces as good as possible.[16]

Check serum hepatitis virus serology of all patients before using the instruments & ensure adequate sterilization of their instruments after being used on infected cases, as we know that dental, endoscope and angiographic equipments pose particular hazard. The health department should take immediate steps to find out correct statistics on the prevalence of serum hepatitis carriers in the community; moreover the government should make available **HBV** vaccines in hospitals for all those who are at risk.[4]


## ACKNOWLEDGEMENT

We would like to acknowledge the help provided to us by Mutahir shah, Oral & Maxillofacial Surgical Deptt, Khyber college of Dentistry, who helped us in data collection.

We are also thankful to Mr. Hafiz Nafees Ahmad, Pakistan Institute of Community Ophthalmology, Hayatabad Medical Complex Peshawar for his services regarding composing and printing.


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