

## AUDIT OF HEPATITIS B AND C VIRUSES IN PATIENTS ATTENDING DENTAL CLINICS

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### ABSTRACT

*This study was carried out to audit hepatitis B and C viruses, detected in the department of pathology, on the patients who visited the dental clinics of Lahore Medical and Dental College, Lahore. This was a retrospective study conducted between March 2006 and January 2008. A total of 575 patients visited the clinic during this period, (250 males and 325 females), of these 80 (13.91%) were positive for hepatitis B or C viruses. HCV was positive in 49 and HBV in 31 patients. Majority of infected patients were females i.e., 45 (7.8%). Maximum number of patients were seen in the age groups between 50 and 60 years and 10-20 years respectively.*

### INTRODUCTION

Some forms of viral hepatitis were identified more than 50 years ago. Hepatitis continues to have an impact on the practice of dentistry. Possible transmission in the dental setting, management of the chronically ill and the legal issues related to the treatment of infectious patients combined to emphasize that hepatitis is still an important issue for dental health care workers. Currently, 7 viral forms are recognized. Those with predominantly enteric modes of transmission including HAV, HEV, and HFV are of minor concern in the dental environment. HBV, the most infectious blood-borne pathogen, has been largely controlled by vaccination and the use of universal precautions.<sup>1</sup> HCV is of great concern today for several reasons. A high percentage of HCV infection results in chronic disease. Most cases remain asymptomatic for an extended period of time, and many have no identifiable risk factors. Currently, no vaccination is available for HCV. Patients infected with HCV present a management challenge, because they may ultimately develop liver dysfunction. After understanding the various forms of viral hepatitis and following recommended infection control and vaccination protocols, the dental healthcare workers can treat infected patients in a manner that is safe for patients and treating workers.<sup>1,15</sup>

In Pakistan, about 10 million people are suffering from Hepatitis: 4 to 5 million are suffering from Hepatitis B, and 5 to 6 million are suffering from Hepatitis C.<sup>3-5</sup> In spite of the anti-hepatitis campaign and extended immunization programs, the disease has not been controlled significantly as no preventive measures have been legally enforced.<sup>2</sup>

The role of the medical community is to spearhead the prevention campaign; careless practices within the medical community itself are a prime

cause of infection. The non-existence of a good patient's history in government as well as in private dental clinics and hospitals, unsterilised dental and medical equipment, used syringes, unsterilised instruments and unscreened blood transfusions are common causes of the spread of hepatitis.<sup>2</sup>

The virus remains active and destructive in chronic carriers in spite of the appearance of health. The Hepatitis B virus, many a times, acts in this way i.e., by the time symptoms are apparent the patient develops cirrhosis or at times even liver cancer.<sup>6,7</sup> Indirect transmission requires an infected object in order for the virus to be transmitted, such as reusing unsterilised syringes, surgical instruments, unsterilised razors at the barber shops, or from needles or guns used for piercing. The female to male ratio has increased from 1:4 in 1990-1996 to more than 1:8 in 2001.<sup>2</sup> According to world health organization, dental clinics, hospitals, contaminated water, unhygienic conditions in the restaurants are the main sources of hepatitis transmission in Pakistan.<sup>2</sup>

### MATERIAL AND METHODS

In the present study samples were collected aseptically in 3 ml syringe, and shifted in plain tube to be placed in water bath at 37°C for clotting. After clotting the samples are centrifuged and serum separated for analyses of hepatitis B and C virus. Hepatitis B and C viral detections were performed using Hexagon (Human, Germany) rapid screening immuno-chromatographic technique for qualitative analysis.

### RESULTS

In a total of 575 patients, 80 (13.91%) were infected, among these 80 patients, 31 (38.75%) were positive for HBV, and 49 (61.25%) were positive

**Table 1:** Showing total number of infected patients both male and female and their relative percentage in each group.

Total No. of patients		Total No. of infected patients		HBV +		HCV +		No. of infected male		No. of infected female	
575		80		31		49		35		45	
Male	Female	Male	Female	Male	Female	Male	Female	HBV+	HCV+	HBV+	HCV+
250	325	35	45	16	15	19	30	16	19	15	30
% of infected patients		13.91%		38.75%		61.25%		43.95%		56.15%	

**Table 2:** Showing total number of infected patients in different age groups and percentage age of infection in each group in relation with total percentage.

Age ranges in years (y)	Male patients	Female patients	Total no. of patients	HBV +	HCV +	Total no. of infected patients	Percentage of infected patients
1 – 10 y	6	4	10	0	2	2	2.44%
10 – 20 y	40	65	105	10	8	18	22.50%
20 – 30 y	92	90	182	4	9	13	16.24%
30 – 40 y	65	80	145	6	9	15	18.98%
40 – 50 y	30	58	88	2	8	10	12.43%
50 – 60 y	10	24	34	8	12	20	27.95%
60 – 70 y	7	4	11	1	1	2	2.44%
Total	250	325	575	31	49	80	13.91%

for HCV. Number of infected males was 35 (43.95%), and that of female was 45 (56.15%). Their age range was 1-70 years. Most of the patients who had attended dental hospital were between the ages of 10 and 50 years. Patients having age range between 20 and 30 years were maximum in number. Infectivity in patients between the age of 50-60 years was 3.47%, 10-20 years was 3.31%, 30 and 40 years was 2.64%, 20-30 years was 2.26%, 40-50 years was 1.73%, 1-10 years and 60-70 years was 0.34%.

## DISCUSSION

Hepatitis is an occupational hazard for surgeons in practice as they are at risk of acquiring hepatitis B and C from infected patients. Personnel can be infected by potential exposure of mucosa, infected blood or blood contaminated saliva and by spatter of blood contaminating eyes, mouth, or broken skin. Paper cuts from blood contaminated request forms could also transmit hepatitis.<sup>13</sup> Plain saliva can also be weakly infectious.<sup>10,14</sup> HBV infected blood products are more dangerous and can transmit infection in as little as 0.000001 ml fluid particularly when they contain "e" antigen.<sup>9</sup> Many cases are followed by needle prick injuries, injections and blood transfusions.<sup>8</sup>

The present study shows that in 575 patients, 80 i.e., (13.91%) were infected which is a very high rate in comparison with a previous study in Pakistan, by Khitab et al., in which 44 persons were infected out of 1498.<sup>8</sup> Amongst the infected patients, incidence of HCV was 8.52% out of 13.91% which is a very high rate, so they are potential risk to the operating oral surgeon and dental health workers.<sup>12</sup> In USA 2% of oral surgeons and 0.7% of general dentists were found to be HCV positive in 1996.<sup>8</sup> Statistical data given by Cawson et al., revealed that; "a dentist treats on an average 20 patients a day, one hepatitis B carrier will be encountered every 7th working day".<sup>9</sup> In our study 31 patients i.e., 5.39% out of 13.91% were HBV positive, which is contrary to the study reported by Khitab et al. in which HBV positive patients were more in number than HCV positive. Globally, 57% of cirrhosis was attributable to either HBV (30%) or HCV (27%) and 78% of hepato cellular carcinomas (HCC) were attributable to HBV (53%) or HCV (25%). Regionally, these infections usually accounted for > 50% of HCC and cirrhosis. Applied to 2002 worldwide mortality estimates, these fractions represent 929,000 deaths due to chronic HBV and HCV infections, including 446,000 cirrhosis deaths.<sup>20</sup> In our study maximum infectivity was

seen between the ages of 10-20 years i.e., 3.13%, which is similar to the study of Khitab et al.<sup>8,9</sup> Our observation confirms the studies previously done by Durrani et al, and Bukhtari et al, showing the high prevalence of HBV and HCV in this part of the world leading to cirrhosis and cancer of liver.<sup>21,22</sup>

All dental health workers must get themselves screened for hepatitis B and C virus. It is therefore essential for a dentist to have immunisation. It may be pointed out that immunisation against HBV also protects against delta virus. Both HCV and HBV infections are preventable and to some extent curable. Therefore one must plan to prevent the spread of this devastating disease in our community.<sup>19</sup>

The risk of hepatitis in dental practice can be decreased by wearing good quality gloves. The use of doubt gloves<sup>14</sup> can decrease the risk of needle pricks by upto 70%.<sup>11</sup> Similarly frequently changing the gloves, during exposure prone procedures can help the surgeon even further.<sup>16</sup> 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 virus infection.<sup>18</sup> However vaccine has not yet developed against HCV hence, the risk of acquiring HCV will continue, it can only be prevented by adopting physical preventive measures.<sup>12</sup> Safe disposal of instruments is also necessary. Disposal of used needles in a hard walled, leak proof and sealable container is necessary.<sup>17</sup> Handling the sharp dental instruments carefully are also mandatory and last but not the least; serological testing of all patients under treatment as well as the operator must be performed in order to prevent the spread to other persons.

As a **conclusion** the role of dentists and dental technicians regarding the spread of hepatitis cannot be ignored in this part of the world. It is the responsibility of dentists and dental technicians to follow the principles of sterilization and disinfection. Check all patients for viral markers before any procedure is carried out and ensure adequate sterilization of their instruments after being used on infected cases. It is advocated that clinics of seropositive patients should be separated from seronegatives.

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