

VACCINATION AGAINST HEPATITIS

VACCINATION STATUS AGAINST HEPATITIS B IN DOCTORS AND FINAL YEAR CLINICAL STUDENTS WORKING AT KHYBER COLLEGE OF DENTISTRY AND SARDAR BEGUM DENTAL COLLEGE, PESHAWAR

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ABSTRACT

This is a descriptive study conducted from February, 2006 to april, 2006 The purpose of this study was to assess the vaccination status of dental health care workers at Khyber college of dentistry and Sardar begum dental college Peshawar. Eighty three doctors and fifty six students were interviewed. Sixty seven doctors and forty three students had vaccinated themselves. Sixteen doctors and twenty five students had booster dose of vaccination as well, while seven doctors and six students had checked their antibody level. The commonest reason for non-vaccination was financial factor (cost) and lack of motivation. Two of the participants thought it was not necessary (including one consultant) while seven other participants had other reasons.

*Among one hundred and thirty nine participants one student and two doctors did not get the 3rd dose of vaccination. Ten students and fifteen doctors had habit of patient screening for **HBsAg** and **antiHCVAb**. Sixty five doctors and forty seven students were aware of the importance of antibody titre.*

INTRODUCTION

Vaccines and related biological products constitute an important group of agents that bridge the disciplines of microbiology, infectious disease, immunology and immunopharmacology. Immunization is practiced to induce protection against many infectious agents and may utilize either inactivated (killed) materials or live attenuated agents'. Dental health care workers are known to be at increased risk of hepatitis and HIV infection". Hepatitis can be caused by infection with six varieties of hepatitis viruses labeled A to E and G. The main types of hepatitis relevant to dentistry are B and C, which are blood borne. Hepatitis B is the chief risk to dental personnel but hepatitis C can also be transmitted during dental surgery'. Viral hepatitis is a

common public health problem in under developed and developing countries. One complication of Hepatitis B infection is the carrier state. Carriers are the individuals who harbors and transmit hepatitis B virus for years and possibly for their life times. Hepatitis B is a global health problem with 350 million people being carrier world wide⁶. In Pakistan this number is estimated at around 7 million with a 5% reporting rate'. Any abrasion on the skin provides a potential route for blood borne viral infections from patient to doctor or vice verse. The risk is directly proportional to the physical contact and immune status of the persons affected. High risk procedures carried for prolong periods, increases the chances of transmission of blood borne viral infection. The risk is mostly related to needle stick injuries or to conjunctival implan-

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tation of virus through eye splashes⁹. Dental care professionals are at increased risk of cross infection while treating the patients. This occupational potential for disease transmission becomes evident when one realizes that most human microbial pathogens have been isolated from oral secretions^{10,11}. In addition majority of the carriers of infectious disease cannot be easily identified^{2,12}. It is essential for the dentist to get active immunization against Hepatitis B. It's effective, safe and protect against hepatitis B and delta agent (HDV). Immunization against HBV also protects against the delta agent and this strengthens the need for immunization'. However vaccine has not yet developed against HCV. Both HBV and HCV infections are preventable and to some extent curable. There fore one must plan realistic, practical and cost effective guidelines to prevent the spread of this devastating disease in our community".

The present study was conducted to asses the vaccination status of dental health care workers at two teaching hospitals at Peshawar.

MATERIALS AND METHODS

This descriptive study was conducted at Khyber College of dentistry and Sardar begum dental college from February, 2006 to April 2006. Dental care professionals were interviewed by convenience sampling after taking their verbal consent. The study population included doctors and final year clinical students. Among the doctors there were Consultants, residents, demonstrators and house officers from the departments of oral surgery, orthodontics, prosthodontics, peadodontics, periodontics and operative dentistry. A self administered pre-coded and pre tested questionnaire consisting of designation of respondents and questions regarding status of hepatitis B vaccination and reasons for non-vaccination inquired. Those who were vaccinated were further asked about the booster dose and checking of hepatitis B surface antibody levels. Questions regarding the importance of antibody titre and habit of patient screening were also included in the proforma.

Data has been analysed by using descriptive statistics tables like frequency tables, percentage charts; using statistical package SPSS (version 10).

RESULTS

A total of one hundred and thirty respondents with an age between 21-65 years were interviewed. The percentage distribution of the respondents by their designation, vaccination status, booster dose and incomplete dosage profile is shown in table-1. The study showed 79.13% of respondents were completely vaccinated, 2.15% had incomplete vaccination and 20.86% didn't have a single dose.

The study also revealed 13(11.81%) of respondents had done their Ab titre, 116(83.45%) were aware of the importance of Ab titre status and 25(17.98) had habit of screening their patients before the dental procedure. Chi-Square test has been applied to check the association of doctors and students vaccination status ($P=0.575$; non-significant) doctors individually ($P=0.082$; non-significant) and senior doctors (consultants, demonstrators) and junior doctors (residents, house officers) $p=0.276$; non-significant.

The respondents' reasons for discontinuing and not taking the vaccination are shown in table 3.

DISCUSSION

Active immunization consists of the administration of antigen to the host to induce formation of antibody and cell mediated immunity. Desirable features of an ideal immunogen include complete prevention of disease, prevention of carrier state, production of prolong immunity with a minimum of immunization dose, absence of toxicity and suitability for mass immunization (e.g. cheap and easy to administer). Passive immunization consists of transfer of immunity to a host using preformed immunologic products. Active immunization is generally preferable to passive immunization in most of the cases because the increased antibody levels are sustained for longer periods of time and requiring less frequent immunization'. At present the etiological varieties of viral hepatitis that can be directly prevented by vaccination are viral hepatitis type A and viral hepatitis type B. viral hepatitis type D can also be preventable by vaccine against viral hepatitis B because hepatitis D virus can only occur in the presence of hepatitis B

Active immunization against hepatitis B virus consists of inactive viral antigen produced by recombinant

TABLE 1: HEPATITIS B VACCINATION STATUS

Participants	Consultants	Demonst/ Lec	Residents	House officers	Total (doctors)	Students	Total partici- pants
Total	9	27	22	25	83	56	139
Vaccinated	8	23	20	16	67 (80.72 %)	43 (76.78%)	110 (79.13%)
Not vaccinated	1	4	2	9	16 (19.27%)	13 (23.21%)	29 (20.86%)
RECEIVED DOSES							
1st Dose	8	23	20	16	67 (80.72%)	43 (76.78%)	110 (79.13%)
2nd Dose	8	23	20	16	67 (80.72%)	43 (76.78%)	110 (79.13%)
3rd Dose	7	22	20	16	65 (78.3%)	42 (76.78%)	107 (76.97%)
Booster Dose	3	19	3	2	27 (40.29%)	25 (58.13%)	52 (47.27%)
Incomplete Dosage	1	1	0	0	2 (2.40%)	1 (1.78%)	3 (2.158%)

TABLE 2: ANTI-BODY TTRE AND PATIENT'S SCREENING HABIT AMONG THE PARTICIPANTS

Participants	Consul- tants	Demons/ lec	Residents	House officers	Total doctors	Students	Total
Total	9	27	22	25	83	56	139
Vaccinated	8	23	20	16	67 (80.72%)	43 (76.78%)	110 (79.13%)
Anti Body titre Done	2	3	0	2	7 (10.44%)	6 (13.95%)	13 (11.81%)
Antibody titre Importance awarness	8	24	19	18	69 (83.13%)	47 (83.92%)	116 (83.45%)
Habit of Patients screening	2	5	5	3	15 (18.07%)	10 (17.85%)	25 (17.98%)

TABLE 3: REASONS OF NOT GETTING VACCINATED

Participants	Consul- tants	Demons/ lec	Residents	House officers	Total doctors	Students	Total
Not vaccinated	1	4	2	9	16	13	29
Cost (financial)	-	1	1	2	4	7	11
Lack of motivation	-	2	1	2	5	2	7
Does'nt consider necessary	1	-	-	2	3	-	3
Worried about side effects	-	-	-	1	1	2	3
It May Not be effective	-	-	-	1	1	-	1
Never thought before	-	1	-	1	2	2	4

technique; Primary immunization comprises of three doses at 0,1 and 6 month, recommended for all infants, pre adolescents, adolescents and young adults, persons with occupational and environmental risk, hemophiliacs, hemodialysis patients and post exposure prophylaxis'. The side effects include redness or soreness at the site of injection (i/m or s/c). A small number of people will feel tiredness and have a slight fever after having the vaccine dose but this usually goes away within 24 hrs¹⁵.

Health care workers coming in contact with hepatitis B patient or infected blood are at higher risk of getting the infection and vaccination has been generally recommended for them^{16, 17, 18}. Vaccination is considered mandatory for health care workers coming in contact with hepatitis B patients^{16,19, 20}.

Our study reveals 80.8 % Doctors and 76.8% students were completely vaccinated. While Najeeb ul Hach et al. has reported 43% of doctors were vaccinated against hepatitis B at Hayat Shaheed Teaching Hospital Peshawar²⁴. Neloufer, et al has reported 86% of health care workers vaccination rate at Agha Khan University Hospital Karachi²¹. Study conducted by Younas et al at Sir Ganga Ram Hospital and Fatima Jinnah Medical College Lahore reported 72% vaccination rate amongst the Doctors²². A Brazilian Study reported 39% vaccination rate for health care workers²³.

The most frequently quoted reason for not receiving or discontinuing vaccination in our study was high cost followed by lack of motivation; financial constraint was the most important factor for students compared to doctors. Study conducted at Hayat Shaheed Teaching Hospital, Peshawar, the main reason cited for not receiving the vaccination was the high cost followed by the lack of motivation²⁴; while the study conducted at Fatima Jinnah Medical College and Allama Iqbal medical college Lahore, the main reason reported was the high cost followed by unavailability of the vaccine^{22,35}. The study conducted at Agha Khan University Hospital, Karachi, the reason quoted was ignorance about the importance of completing the vaccination²¹. In our study there were 2 doctors and one student who reported for not receiving the third dose of vaccination, the reason was not mentioned. Our study shows that 7(10.44%) doctors and 6(13.95%) students, i.e 13(11.3%)

participants, who have checked their antibodies titre, comparing it with the study conducted at Hayat Shaheed Teaching Hospital, which reported 7 (9%) doctors who had checked the antibody titre', our study revealed higher rate of antibody titre checked among the participants. Routine checking of surface antibody to hepatitis B virus is not mandatory. However various factors may alter its production and then it may be important to check its level. Factors which can lead to decreased production of antibody response include age above 50, HLA status, injecting vaccine in gluteal muscle, HIV positivity and frozen vaccine. Any of these should prompt a person to check the antibody level after the vaccination. Surface antibody level of less than 10iu/L are seroconverted but not seroprotective level. An adequate response (levels above 100iu/L, super response) will give long term protection. Lower antibody levels may still give protection and if infection occurs it is usually sub-clinical. (1-10 seroconvert, T10 seroprotective, T100 seroresponse)^{33,34}.

Booster doses at 5 years are generally not recommended now. In our study booster doses were received by 27 (40.29% doctors and 25 (58.13%) student, (total booster dosage received by the participants, 52(47.27%) and is less than the doctors of Hayat Shaheed Hospital Peshawar, (n=60(80%))²⁴.

Our study revealed 15(18.07) of doctors and 10(17.85) of students, who had habit of screening their patients before minor and major dental procedure in routine. While 2 participants reported that they used to rely on the history and suspected patients with the previous history of jaundice and family history of hepatitis, are screened. This shows that our doctors and students are less aware of the importance of patient screening before a dental procedure. HBV infected blood and blood products are more dangerous and can transmit infection in as little as 0.0000001ml fluid, particularly when containing the e antigen⁴. While doctors at the department of oral and maxillofacial surgery, Khyber College of dentistry Peshawar, routinely screened their patients before performing their procedures (under general anesthesia)²⁵. A data collected at a specialized private dental clinic in Mardan (NWFP) by Doctor Umar Khitab from March 2006 to August 2006; out of Five hundred and fifteen patients, twenty five were ANTI-HCV Ab positive and six among those were positive for HBs Ag. Study conducted at Hayat Shaheed

Surgical Hospital, Peshawar on surgical patients shows that every 11th patient is a potential risk of transmitting the virus to the operating surgeons²⁶. In our previous study at Khyber College of Dentistry Peshawar, maxillofacial surgical ward showed increased incidence of HCV and HBV in preoperative surgical patients, that

study revealed almost every 34th patient; being operated for oral surgeries under GA is a potential risk to the operating oral surgeon²⁵. A study conducted at medical department of Hayat Shaheed Hospital Peshawar regarding relative frequency of HBV and HCV in patients of liver cirrhosis in NWFP also shows increase frequency of HBsAg positive patients²⁷.

Statistical data given by R.A Cowson in his book *"Essentials Of Oral Pathology And Oral Medicine"* revealed that, if a dentist treats 20 patients a day, one hepatitis B carrier will be encountered every 7 working days⁴. In our previous study (study conducted at Khyber College of Dentistry Peshawar) 25 patients were infected with hepatitis B virus (i.e 1.66%) thus with the same frequency of exposure our dental surgeons will encounter 2.5 patients per week²⁵. So it is desirable to check the serum hepatitis virus serology of all patients before using the instruments and ensure adequate sterilization of the instruments after being used on infected cases, as we know that dental instruments pose particular hazard.

The risk of hepatitis in dental practice can be decreased by wearing good quality gloves²⁸. The use of double gloves can decrease the risk of needle pricks by up to 70%⁹. Similarly frequently changing the gloves, during the exposure prone procedures can help the surgeon's even further²⁹. Conjunctival spillage of blood can be avoided by using eye shields, goggles or surgical helmet. Active immunization against hepatitis B viral infection plays a vital role in preventing this deadly viral infection⁸. Safe disposal of used instruments is also necessary. Disposal of used needles in a hard walled, leak proof and sealable container is necessary. Handling the sharp dental instruments carefully is also mandatory²⁵.

CONCLUSIONS AND RECOMMENDATIONS

A significant number of our health care workers are not vaccinated and are at risk of getting Hepatitis B, cheap or free vaccination must be provided to them and awareness created amongst them by educative

workshops. It should be made compulsory for every doctor to get immunization against Hepatitis B before employment and every student before admission into a dental school. We recommend that awareness programs among the doctors should start at their medical school level; 31 moreover regular educational campaigns for health care workers are needed to increase vaccination compliance. The health department has to provide formal infection control courses for the dental professions moreover infection control manuals for dental practices have to be developed³². Dental assistants should be well trained in following various sterilization methods, well educated regarding the cross infection risks and immunized against Hepatitis B virology. Health department should take immediate steps to find out correct statistics on prevalence of serum hepatitis carriers in the community¹³. We recommend that the government should provide blood screening facilities for the dental hospitals. It should be a routine practice to screen the patients before the major and minor dental surgical procedure which may act as a route of cross infection in the dental setup²⁵.

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