

ORIGINAL ARTICLE

Hepatitis B and C amongst OPD patients Seeking Dental Treatment at Khyber College of Dentistry Peshawar

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ABSTRACT

Background: Hepatitis is an inflammatory condition of the liver; mostly caused by hepatitis B virus (HBV) and hepatitis C virus. These viruses are the main cause of severe liver disease as well as Hepatocellular carcinoma and liver cirrhosis. Hepatitis B is preventable through vaccination which is not possible in case of Hepatitis C.

Aim: To access magnitude of hepatitis B and C amongst OPD patients seeking dental treatment at Khyber College of Dentistry Peshawar.

Methods: Cross sectional study was conducted at KCD Peshawar. A total 13270 samples were collected during the period of March 2019 to June 2019 selected through Consecutive sampling technique. All the patients were screened for HBS, HCV by ICT method before any dental procedure. Those samples which were found positive for HBS and HCV were reconfirmed by ELISA technique **Results:** The total percentages of negative HBV were 13110(98.8%) while HBV positive diagnosed patients were 160(1.2%). While Total HCV positive were 233(1.8%) among these males were 143(1.6%) while females were 90(2.0%)

Conclusion: Study has shown HCV which has poor prognosis comparative to HBV is more prevalent demanding more health education interventional programs by planning and policy makers.

Keywords: HCV, HBS, ICT and Dental patients.

INTRODUCTION

Hepatitis is an inflammatory condition of the liver; mostly this infection is caused by hepatitis B virus (HBV) and hepatitis C virus (Kar, Sabat, Ho, Arora, & Dwibedi, 2019) (N. Ali et al., 2019). These viruses are the main cause of severe liver disease, as well as Hepatocellular carcinoma and liver cirrhosis (Dahiya, Kamal, Sharma, & Kaur, 2015) (Desikan et al., 2019).

Dental health care professionals are more prone to contract microbial infections including hepatitis B and hepatitis C (Dahiya et al., 2015) (Pratha & Geetha, 2017). Hepatitis B and C account for 96% of all hepatitis related mortality (Organization, 2017). Hepatitis B virus (HBV) is the causative factor of viral hepatitis B which can end up in Hepatocellular carcinoma (HCC) and cirrhosis. (Aniaku, Amedonu, & Fusheini, 2019) It can be transmitted from mother to child (Batsis, Wasuwanich, & Karnsakul, 2019) and main reason of spread in endemic areas and of chronic hepatitis (Ding, Sheng, & Dou, 2019) based upon which World Health Organization has recommended pregnant women systematic HBV screening and vaccination (Kilmer, Barker, Ly, & Jiles, 2019) at birth to prevent its vertical transmission (Bierhoff et al., 2019) in endemic countries (Djaogol et al., 2019) Infection with HBV is a serious global health issue affecting 257 million with chronic infection (Organization, 2017). Even 66,000 health care workers annually get infected with this virus (Eillard et al., 2019) (Bittaye, Idoko, Ekele, Obed, & Nyan, 2019). But studies have shown that preventive and control measures have greatly reduced the acute Hepatitis B reinforcing stronger prevention and control measures implementation in high risk group (Koc et al., 2019). Hepatitis C virus is the causative factor of Viral Hepatitis C which is a major public health problem (Bartholomew, Grosgebauer, Huynh, & Cos, 2019) with 1.75 million new case reported in 2015 worldwide (Bailey, Barnes, & Cox, 2019) (Dayan, Ozekinci, Bekcibasi, & Devenci, 2019) with high prevalence in low and middle income countries and one of main cause of chronic liver disease. globally 71 million were reported having chronic HCV infection in 2015 (Organization, 2017). It has also affected the paediatric population strengthening the importance of directly acting antiviral agents (Matejtschuk et al) (El-Shabrawi & Hassanin, 2019).

Hepatitis C virus is most commonly transmitted through blood transfusion and intravenous drugs abuse (Behrendt, Bruning, Todt, & Steinmann, 2019). HBV can be prevented with vaccine which is not possible in case of HCV (Elamin & Abu-Aisha, 2011). Direct-acting antiviral treatment (Matejtschuk et al.) is highly effective and can not only reduce the chronic hepatitis C virus prevalence but also prevent the onward transmission of HCV (Knight & Ti, 2019). (Bethea et al., 2019) Hepatitis B and Hepatitis C are the most common serious liver infection in the world. Hepatitis B virus (HBV) is responsible for estimated 887,000 deaths per year (Ko et al., 2019). HCV epidemic has affected all the regions globally with maximum reporting from Eastern Mediterranean Region and the European Region of world health Organization. While HBV epidemic mainly affected African and the Western Pacific Region of world Health Organization (Organization, 2017). The hepatitis B virus was discovered by Dr. Baruch Blumberg who won the noble prize for his discovery (Trepo, 2014). HBV also named as called the Australia antigen in the beginning. The present era of viral hepatitis started in the early 1960s with the unexpected detection of the Australia antigen, a protein that represented the hepatitis B virus envelope later titled as the hepatitis B surface antigen which turned out to be the first marker for any hepatitis virus. It was not only considered a diagnostic assay but also an compulsory screening test for blood donor and also the foundation for the first generation hepatitis B vaccine (Alter, 2019). HBs Ag level can be tested by applying HB chemiluminescent microparticle immunoassay, electrochemiluminescent immunoassay, golden immunochromatographic assay (Liu et al., 2014) and enzyme-linked immunosorbent assay (ELISA) (Dhiman, Patidar, & Hazarika, 2019). Hepatitis B virus (HBV) virus is the prototype member of a family of viruses called Hepadna viruses (which have small, enveloped, spherical virus particles that are about 40-80nm (1nm=10⁻⁹ meter) in diameter) (Fakhoury, 2017). While hepatitis C virus was discovered as a new viral agent causing non-A, non-B hepatitis by Choo and co-workers in 1989 (I. Ali et al., 2011).

HCV is a member of the Flaviviridae family which is small and enveloped, and the unique example of the genus Hepacivirus (Simmonds et al., 2017) HCV is a hepatotropic RNA virus responsible for progressive damage of liver, which might result in liver cirrhosis and Hepatocellular carcinoma. HCV RNA

Received on 24-04-2022

Accepted on 25-08-2022

quantification, serum HCV antibody, viral genotype and subtype determination and measurement of resistance-related substitutions are all Diagnostic procedures for Hepatitis C (Manns et al., 2017). Hepatitis B and Hepatitis C are major public health problems globally (Katamba, Chungu, & Lusale, 2019). Approximately 354 million people are affected by hepatitis B or C worldwide (Organization, 2017). According WHO reports that the frequency of HBV differs from 0.008% to 6.08%, HCV differs from 0.004% to 1.96% separately in different areas of the world (Farshadpour et al., 2016). In Pakistan hepatitis B and C affected people are 5 and 10 million respectively and According to WHO 23,720 people died in 2016 in Pakistan due to hepatitis-related causes (Organization, 2019). This was reported that the chronic state of hepatitis B among high-risk group in Pakistan was 6-12% while the prevalence of HCV was reported 15-25% which was much higher than HBV infection (Khan, Hussain, Irshad, & Khan, 2015). According to a study from Islamabad HBV and HCV prevalence was found to be 2.8% and 18.9% respectively with High prevalence of 24% in males comparative to 20.3% (Basit et al., 2014). Our health care providers are at continuous threat to contract these infections especially during dental procedures and instrumentation from the affected patients seeking dental care.

So the present study is designed to get an insight of prevalence of Hepatitis B and C amongst patients seeking dental care in KCD Peshawar.

MATERIAL AND METHODS

Cross sectional study was conducted at Khyber College of Dentistry Peshawar from March 2019 to June 2019 with a sample of 13270 collected through consecutive sampling. SPSS version 23 was used for the analysis of the data. After ethical approval and consent the blood samples were taken from the patients who came to KCD for dental treatment which were collected in jell tube. Percentages and frequencies for Variables like gender and Types of Hepatitis were calculated and presented in the form of Pie chart and Bar chart respectively and their cross tabulations through frequency tables. All the test processes were performed in pathology laboratory of Khyber College of Dentistry. The samples were labeled and handled in the phlebotomy section of KCD then the centrifugation was performed for the separation of serum from whole blood (Adeyemi, Omolade, & Raheem-Ademola, 2013) for 4-7 minutes at 4000 rpm, after centrifugation the sample tubes were put in rack after that the ICT technique was performed by qualified trained staff (Waheed et al., 2019) The word Immunochromatography is the combination of chromatography (separation of components of a sample based difference in their movement through a sorbent) and immunoassay (detecting of specific proteins or substances through their properties as antigens or antibodies) (Dzantiev, Byzova, Urusov, & Zherdev, 2014). After the detection positive cases were confirmed by ELISA(Kim, 2017); ELISA (Hayder, Ahmed, & Alam, 2012) is a technique for detecting and to quantify antibodies or antigens through providing secondary enzymes (Claire Horlock).

RESULTS

A total number of 13270 blood samples were collected from patients who visited KCD OPD for any kind of dental procedure. All the patients were screened for HBS, HCV by ICT method before any dental procedure. Those samples which were found positive for HBS and HCV were reconfirmed by ELISA technique. Out of total 13270 patients 8860(66.8%) were males and 4410 (33.2%) were females as shown in figure 01. The total percentages of negative HBV were 13110(98.8%) while HBV positive patients were diagnosed 160(1.2%). Among the total percentage of HBV patients 4369 (99.1%) subjects were females which were negative and 41(0.9%) were diagnosed positive while 8741(98.7%) participant were males which were negative and 119(1.3%) participant were diagnosed with HBV infection. While Total HCV

positive were 233(1.8%) among these males were 143(1.6%) while females were 90(2.0%) as shown in table 01.

Fig. 1

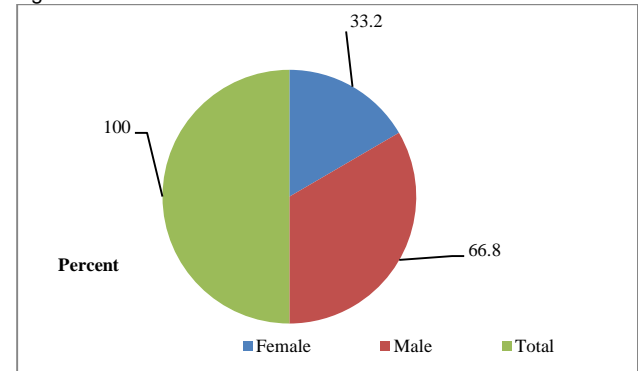


Figure 2: Frequency of HBV infection

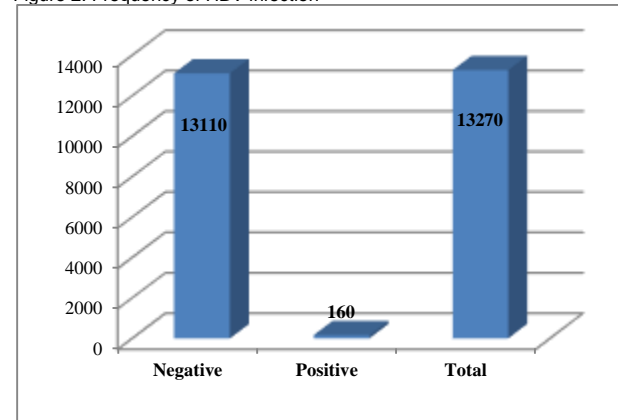


Fig. 3: Frequency of Hepatitis C

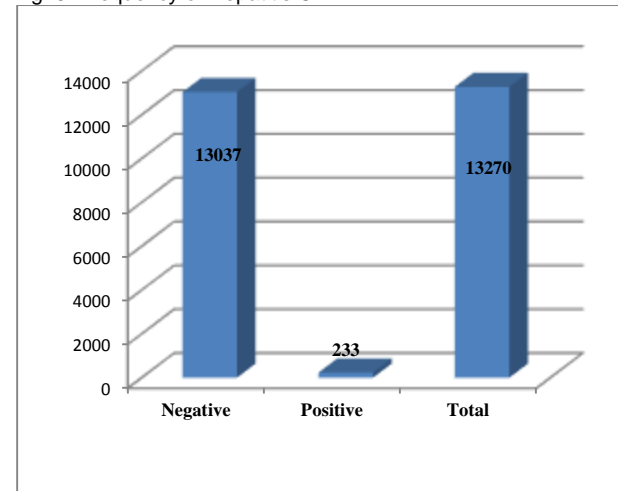


Table 1: Frequency of Hepatitis

Hepatitis	Male	Female
HBS		
Negative	4369 (99.10)	8741 (98.70)
Positive	41 (00.90)	119 (01.30)
HCV		
Negative	4320 (98.00)	8717 (98.40)
Positive	90 (02.00)	143 (01.60)

DISCUSSION

HBV and HCV infection cause life intimidating liver disorders (Malik, Khan, & Khan, 2018). Dental patients may obtain HBS, HCV infections by unsterilized or contaminated equipment's mostly like invasive procedure equipment's (Pratha & Geetha, 2017). The study showed that dental treatment with contaminated or unsterilized dental equipment's is also the common risk factor for the acquirement of HBV and HCV infections. Globally, studies were conducted recently in which the prevalence of HBS, HCV infection was 170million, 350million respectively (Mohsenizadeh, Mollaei, & Ghaziizadeh, 2017). Studies from Pakistan showed the prevalence of HCV (6-12%) was much higher than HBV (15-25%) infection (Haider, Lufullah, Nazli, Akhtar, & Shah, 2017) in accordance with the findings of current study. A study was conducted in 2006 reported an overall prevalence of 2.8% for HBV and 3.19% for HCV in general population of NWFP. Another review study was conducted in 2009 on prevalence and risk factors of HBV and HCV in general population of Pakistan which showed an overall prevalence in adults 2.4% for HBV and 3.0% for HCV. The study was conducted at KCD in 2017 which showed the overall prevalence of HBV and HCV was (5.12%), in which (2.14%) were found to HBs Ag positive while HCV positive accounted for (2.98%) (Haider et al., 2017). A similar study conducted in dental patients visiting to Bacha Khan Medical & Dental College in 2015 has shown a prevalence of HCV was 7.75% while HBV was reported 7.0%. This ratio is much higher than found in current study. Study conducted at dental department of Ayub Medical College Abbottabad which showed the total infection of HBV & HCV was 4.1% (Bosan, Qureshi, Bile, Ahmad, & Hafiz, 2010). In our study we had screened 13270 individuals from general OPD at KCD Peshawar during this study we found 160(1.21%) HBV, 233(1.76%) HCV infections which shown the decreased frequency of these virus as compared to previous studies so we concluded that the reason for decreased frequencies were might be proper sterilization in dental hospital, vaccination availability, and awareness from these infection.

CONCLUSION

Although prevalence of HBV infection and HCV infection is low comparative to previous studies in general but HCV infection which has poor prognosis comparative to HBV is more prevalent demanding more health education interventional programs by planning and policy makers.

Conflict of interest: Nil

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