Original Article

Frequency of Hepatitis B in Civil Hospital District Khairpur Province of Sindh, Pakistan

Hepatitis B in Khairpur Sindh

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ABSTRACT

Objective: Viral hepatitis B stays to be a chief health problem in Pakistan's Sindh province which encourages retrospective evaluation of the current frequency of its occurrence.

Study Design: Prospective study

Place and Duration of Study: This study was conducted at the Civil Hospital district Khairpur, Sindh province of Pakistan in period of 15 years from Jan 01, 2007 to Aug 30, 2021.

Materials and Methods: A total of 860,470 individuals of both sexes were screened for HBsAg in Civil Hospital Khairpur, encompassing the period of 15 years. HBsAg as a marker of HBV was considered in all serum samples which were tested using the Roche COBAS CORE HBsAg-II EIA system. SPSS version 23 was used for data entry and analysis.

Results: The prevalence of Hepatitis B (HBV) was analyzed over the period of fifteen years (2007-2021), in our study. In 2007, (16.0%) HBV was reported. It was seen that the prevalence of HBV were more than ten percent from 2007-2011. In 2012, it was (6.4%). But, after 2015, HBV was gradually decreasing. Therefore, in 2021, only (4.2%) was observed. The Linear forecasting trend line showed the decreasing trend.

Conclusion: HBsAg positivity in Khairpur has steadily decreased in frequency from 16% positive cases in 2007 to 4.2% positive cases in 2021.

Key Words: HBsAg, Frequency, Khairpur, Sindh, Pakistan.

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INTRODUCTION

Hepatitis B virus infection is one of the prominent public health issues. It is a leading reason of Chronic Liver Diseases (CLD) [1].According to WHO estimation, "296 million people were living with chronic hepatitis B infection in 2019, with 1.5 million new infections each year. Same year hepatitis B resulted in an estimated 820,000 deaths, mostly from cirrhosis and hepatocellular carcinoma (primary liver cancer)."[2]

The worldwide prevalence of hepatitis B virus varies broadly, with frequency fluctuating from 0.1% to 20%.[3]While high prevalence regions include China, parts of the Middle East and sub-Saharan Africa with hepatitis B positive cases is >8%, and low prevalence regions includes the United States, Northern Europe and Australia where rate is <2% hepatitis B positive, Intermediate prevalence with 2% to 7% hepatitis B positive cases is reported, in Japan, the Indian subcontinent, and parts of central Asia.[4,5,6,7]

Pakistan lies in the intermediate prevalence zone of hepatitis B while carrier rate is 3-4%. Hepatitis B is evolving into a big health problem.[8] Recent observations of chronic hepatitis, Hepatocellular carcinoma and cirrhosis from various regions of Pakistan showed 20-30% hepatitis B positivity in HCC patients.[9]As such viral diseases required substantial amount of resources[10] from health budget which ultimately increases the burden on government expenditures. Moreover further resources are used to restrain diseases and mortality rate.Hepatitis B can transmit vertically during pregnancy and cause early chronic liver disease. It is imperative to keep the close watch on the trends of viral diseases.

We wanted to check the trend of hepatitis B over last 15 years in our Outpatient department where the patients are from all ethnic and age groups visit, and are from numerous parts of Pakistan. We also wanted to endorse our opinions as regards to practices of these regions

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which can be responsible for an increase in spread of this viral hepatitis.

MATERIALS AND METHODS

The current study was conducted at The Civil hospital Khairpur. Data on blood immunological reactions had been collected since 2007.All samples were collected according to the protocols approved by the institutional ethical review board.A total of 860,470 people screened for HBsAg at Civil Hospital Khairpur in the serology laboratory during the period of 15 years from Jan 01, 2007 to Aug 30, 2021; out of which 456,049 were females (53%) and 404,421 were males (47%).

The subjected people were from the broad population group which includes women undertaking prenatal blood screening, children, and students, hospitalized patients with dysfunctional or regular liver functions, blood donors, professional health workers, doctors and folks completing foreign-travel visa requirements.

All candidates were screened for hepatitis B surface antigen HBsAg, Blood samples of about 5 ml blood from grown-ups and 1-3 ml from children and infants was taken in one-use sterile syringes, and readily shifted into sterile test tubes which were clot at room temperature, later at 1000rpm centrifuged for around 16 mins, and the buoyant serum on time removed from the debris and crammed cells. Evidently hemolytic samples which may cause false positive test outcomes were rejected.

Samples were tested using the HBsAg II EIA (Roche) solid phase qualitative enzyme immunoassay in the COBAS CORE analyzer. Manufacturer's instructions were strictly followed while performing the assays. Samples which were at or above the threshold value for HBsAg test were taken as reactive and the tests were repeated two times for further verification. In situation of repetitively positive results in two out of three analyses, confirmation test was implemented. Clienteles were self-driven or were routine appointments, and beyond taking gender and age, no attempt was feasible to acquire some history of first contact or probable cause of infection related with HBsAg positive patients as it was retrospective study.

A electronic data sheet was used for record examination and statistical analysis; all data were evaluated with SPSS23.0.We calculated prevalence of viral markers in total people screened positive with HBsAg (with 95% confidence interval (CI)) from total screened samples for each year to assess the frequency of infection in blood samples per year. Prevalence percentage was defined as number of seropositive people divided by total number of people for each year. To determine the infection trend in population, frequencies were plotted as the Linear forecast.

RESULTS

The prevalence of Hepatitis B (HBV) were analyzed over the period of fifteen years (2007-2021), in our study.In 2007, (16.0%) HBV was reported. It was seen that the prevalence of HBV were more than ten percent from 2007-2011. In 2012, it was (6.4%). But, after 2015, HBV was gradually decreasing. Therefore, in 2021, only (4.2%) was observed. The Linear forecasting trend line showed the decreasing trend. (Table. I). (Figure. I).

Table No.1:

Sr. No	HBV Year	HBV Total Screened	HBV Positive cases	HBV Positive (%)
1	2007	15077	2407	16.0
2	2008	13297	2059	15.5
3	2009	25583	2020	7.9
4	2010	13533	1448	10.7
5	2011	16873	1984	11.8
6	2012	22111	1408	6.4
7	2013	20868	1518	7.3
8	2014	26427	2647	10.0
9	2015	23135	1858	8.0
10	2016	56507	3790	6.7
11	2017	99885	5323	5.3
12	2018	138993	7874	5.7
13	2019	141987	5309	3.7
14	2020	135476	5322	3.9
15	2021	110718	4657	4.2

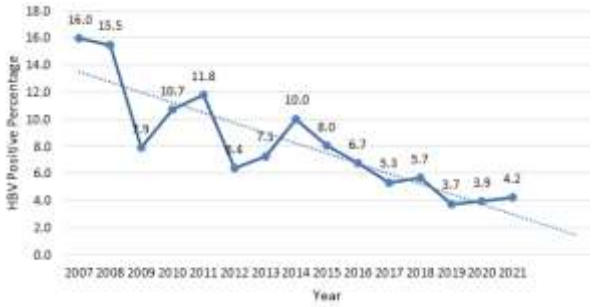

Figure No.1: Trend of HBV

DISCUSSION

This retrospective study (2007–2021) encompasses significant results showing that compared to previous years, the HBV infection rates have decreased substantially in patients visiting Khairpur civil hospital [Table 1]. HBsAg positivity among blood samples was around 16% during the years 2007 and 2008, which later decreased to 7.9% in 2009, following years it surged to 11.8% in 2011 but after 2014 there is steady downward trend, in 2021 it was 4.2%.

The outcomes of following study revealed a more protruding decrease in HBV positivity rate among the masses when the data of 15 years are plotted in linear forecast [Figure-1]. These promising results can be attributed to following factors. During the period 15 years there is relative improvement in drinking water by water filtration programs and increased access to better sanitation facilities. Also awareness of people about infectious diseases and prevention measures increased in the public with following measures.During our study period certain procedures incorporated into practice by health care authorities to avert the spread of hepatitis infections. These include encouraging the use of disposable syringes, hygienic practices and strict vaccination programs.

In our country, "Hepatitis B vaccine was first integrated in Pakistan's EPI (expended program on immunization) in 2001 as a tetravalent vaccine (with DPT) and later replaced with the pentavalent vaccine (DPT, HBV, Hib) given at 6, 10 and 14 weeks without a birth dose".[11] Other corresponding studies also validate our findings such as in 2006 studies Yousfani S et al.[12] observed 12.6% HBsAg positive cases, in 2008 studies 7.39% and 6.2% positive cases were observed by Malik N et al.[13] and Mujeeb SA et al.[14] while in 2009 4.6% positive cases were reported by Junejo SA et al.[15]

In 2021, Asghar MS et al.[16] observed Hepatitis B positive in 3.96% cases from 964 samples.Another study in 2021 by Khan MI et al.[17] observed from 119,263 people the overall frequency of hepatitis B was 1.42%. Similarly 1.7% of 1769 pregnant females screened for hepatitis B seropositivity in 2022 study by Ehsan A et al.[18]

Although these numbers are promising still, "in Pakistan, there are estimated 7-9 million carriers of hepatitis B virus (HBV) with a carrier rate of 3-5%."[19,20] This is quite a lot of patients.To fight the virus is however, requires strong political commitment in implementing health policies and improving health infrastructure. While it is imperative to employee multisectorial engagement through education and awareness on public and private level is also required.In our study, no difference among genders could be observed.

CONCLUSION

Our study encompassing 15 years (2007–2021) in which total of 860,470 people screened. Our finding reveals that there is downward trend in hepatitis B positive cases in Civil hospital Khairpur.

Recommendations: Further studies recommended investigating risk factors and common modes of transmission and awareness programs are required to further decrease its incidence.

Author's Contribution:

Concept & Design of Study:	Sarmad Saeed
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Revisiting Critically:	Sarmad Saeed, Shehzad Tariq
Final Approval of version:	Sarmad Saeed

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