



DEMOGRAPHIC AND EPIDEMIOLOGICAL CHARACTERISTICS OF HEPATITIS B INFECTED PATIENTS IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Introduction: Hepatitis B virus infection is one among the principle causes of liver diseases and death, which has limited data on demographic and epidemiological characteristics. This study aims to determine the above characters in patients diagnosed with HBV, enrolled at saveetha medical college and hospital.

Methods: Medical records of patients aged >18yrs and diagnosed with HBV infection from June 2018 to December 2018 were analysed for this study.

Result: Among 79 patients taken for study, the male and female ratio is 55:24; mean age limit of HBV cases are between 40-48 years. Few cases were found to be co infected with HCV and 2-3 cases were medicated workers and 21 cases received tenofovir monotherapy.

Conclusion: This study reviewed the epidemiological and demographic characteristics of HBV infected patients and revealed their role in HBV. New measures has to be implemented for curative and preventive measures to create awareness among patients.

Aim : To determine the demographic and epidemiological characteristics of Hepatitis B infected patients in a tertiary care hospital

KEYWORDS : Endemic ; Genotype ; Preventive ; Sterilization ;Transmission

INTRODUCTION:

Hepatitis B Virus (HBV) is one of the major global public health problems. HBV infection is the tenth leading cause of death and HBV related Hepatocellular Carcinoma (HCC) is the 5th most frequent carcinoma worldwide. About 30 percent of world's population has serological evidence of current or past infection with HBV. Of these an estimated 350 million are chronically infected with HBV and approximately 1 million persons die annually from HBV related chronic liver diseases including severe complications such as Liver Cirrhosis (LC) and HCC. HBV is distributed worldwide, but its prevalence varies significantly between different populations of the world.

Area of high prevalence (HbsAg Carriage > 8%)

Sub-Saharan Africa
East Asian and Alaskan Population

Area of intermediate prevalence (HbsAg Carriage > 2-7%)

Southern parts of eastern and central Europe
Amazon basin
Middle-east and Indian sub-continent

Low HBV Endemic (HBSAG Carriage <2%)

Western and Northern Europe
Northern America and Australia

In India HbsAg prevalence among general population ranges from 2% to 8%, placing India in intermediate HbsAg endemic zone and the number of HBV carriers is estimated to 50 to 60 million, forming the second largest global pool of chronic HBV infections. India is a vast country, comprised of multiracial communities with wide variations in ethnicity and cultural patterns, which is attributable to its geographical location, gene influx due to invasions and anthropological migrations in the past. Moreover, recent increase in trade, trafficking and use of illicit drugs has also considerably influenced the epidemiology of HBV specifically in the eastern and north-eastern parts of India. However data on the molecular epidemiology of HBV in India is scanty. Interestingly in addition to genotypes A and D, genotype C having high nucleotide. Similarity with south-east Asian sub genotype strain, have been detected exclusively from eastern Indian HBV carriers suggesting a recent introduction. This article is focussed on to determine demographic and epidemiological characteristics of patients diagnosed with HBV and follow up at Saveetha Medical College Hospital.

STUDY DESIGN AND METHODS:

This was a retrospective, descriptive study conducted by Microbiology Department at Saveetha Medical College Hospital, Tandalam, Chennai from June 2018 to December 2018. About 5500 medical records of both outpatients and inpatients above 18 years old were reviewed for this study at Saveetha Medical College. Among these patients about 79 patients were confirmed with HBV positive infection

(HBsAg⁺, HBeAg⁺, anti HbcIgM⁺ or HBV-DNA⁺) according to the clinical protocol.

MATERIALS REQUIRED:

Mainly Hepatitis diagnostic Serology is performed by enzyme linked immunosorbent assay for (ELISA) HBV. Hepatitis B surface antigen (HbsAg) is most frequently used to screen for the presence of this infection. However early in infection this antigen maybe present or it may be undetectable later in the infection as it is cleared by the host. During the window period IgM antibodies specific to the hepatitis B Core antigen (anti HbcIgM) maybe the only serological evidence of the disease. So most of the hepatitis B diagnostic panels contain HBsAg and total anti HBC (both IgM and IgG). In some cases higher rates of viral replication and enhanced infectivity was detected by the presence of another antigen called (HbeAg) Hepatitis B e antigen. Individuals who remain HBsAg positive for atleast six months are considered to be the hepatitis B carriers. These chronic cases of hepatitis B are reflected by elevated serum alanine aminotransferase (ALT) levels are inflammation of liver. PCR test have been developed to detect and measure the amount of HBV DNA called as viral load. We reviewed all the assays done for confirmation of hepatitis B from results. Blood samples were collected from patients and sent for above test for confirmation.

DATA COLLECTION:

Demographical and Epidemiological Details

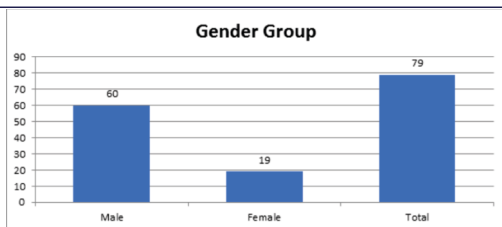
The basic information collected from the records consisted of demographic variables like sex, marital status, residence, institutionalization and educational status. Risk factors were also collected which are associated with HBV infections like Community associated : Tattoo and body piercing, dentistry treatment, family conduct and sexual transmission from husband. Hospital associated risk factors like Blood exposure and past surgery were also collected including the behavioural factors like Intranasal drug use, injectable drug use, more than one sex partners and heavy alcohol use. All the above data were collected from patients and considered for the survey.

RESULTS AND DISCUSSION:

From the demographic details collected from HBV Positive patients, from Saveetha Medical College Hospital, during the period of June 2018 to December 2018 the following results were obtained finally. About 79 patients with proven, HBV positive infection cases were enrolled in the study, and the results are calculated according demographically.

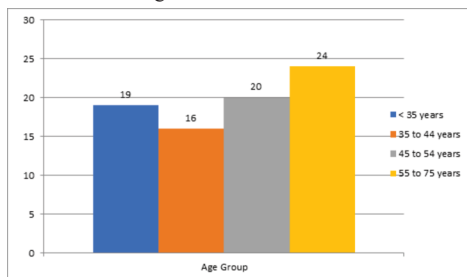
Gender Group

Totally 79 patients were admitted in the hospital with the HBV infection. Among them about 19 were female with a percentage of 24% and about 60 of them were male with percentage of 76%. The male and female ratio according to the data collected is 76:24. This implies that the male were more affected than the female.



Age Group

Along with the gender, the age group of the affected was also simultaneously collected. It revealed that about only 19 patients were below the 35 years of age. And 16 patients were between 35 - 44 years of age ; 20 patients were between 45 - 54 years of age ; 24 patients were between the age of 55 – 75 years of age. Thus from data, the mean age ratio was between 45 – 48 years of age. The occurrence of the infection reduced with increase in age.



Other Demographic Details

Along with the age and gender details other demographic details were also specifically observed. About 70 patients from the collected data were married and 69 of them were living in the urban areas. About 15 patients were educated up to the college level and 30 of them were illiterate. Among these about 55 patients were occupied with some jobs while 15 of them were without any steady job. 3 of them were found to be health care workers working in hospitals.

Regarding Risk factors

Concerning the risk factors associated with HBV infection, Tattoos, ear and nose piercing and dentistry treatment was the most prevalent community associated risk factors reported by 32 (42.3%) patients. Past surgery was the most prevalent Hospital associated risk factors found in 36 (48%) patients and ≥3 sexual partners was the most prevalent Behaviour associated risk factors in 27 (36%) patients. HIV & HCV co-infection was present in 17 (22.77%) patients. 9 (12%) were co-infected with HIV and 5 (6.7%) were co-infected with HCV and 3 (4%) were co-infected with both HIV and HCV. Aged people are found to be co-infected with Pulmonary Tuberculosis, CAD and chronic diseases.

Table 2. Characteristics of patients receiving Hepatitis B virus antiviral therapy

Patients (79)	No (58)	Yes (21)
1. Age Category		
< 35	25	3
35 – 44	11	9
45 – 54	13	5
55 – 75	10	
2. Sex		
Male	39	16
Female	19	5
3. ALT Status		
Normal	34	18
Increased	24	3
4. HbeAg		
Positive	13	5
Negative	17	8
Not Detected	28	8
5. Clinical Form		
Chronic	40	19
Acute	11	2
Pulminant	2	1

This study presents hospital based populative observations regarding epidemic demographic and risk factors for transmission of hepatitis B.

Our study analysed data from over a period of time and the patients included based on diagnosis did not represent the entire burden of HBV infection in Tamil Nadu, India.

The peak of infection occurred in individuals between 40-48 years old and declined thereafter, 12% were co-infected with HIV, 6.7% were with HCV and 4% were with both HIV and HCV. Tenofovir Mono Therapy was the most prescribed medication. Approximately after 2 years of antiviral treatment, the HBV DNA viral load was undetectable in 92.3% patients and lower levels of ALT were found in these patients. There Is a countrywide under estimation of true number of individuals infected with HBV mostly because the highest risk population are underrepresented in surveillance. This is a significant percentage of chronically infected individuals remain undiagnosed. This situation is shared worldwide and highlights the strong likelihood that chronic Hepatitis B remains an under-recognised disease.

In India, healthcare workers are at increased risk of exposure to Hepatitis B and C. Immunisation against Hepatitis B is recommended in healthcare workers, but there is ignorance and lack of awareness regarding this. A recent study from south India concluded that knowledge and practice of universal precaution among paramedics was unsatisfactory. The risk of infection after needle stick injury is 23 (62%) for HBV. Another study showed 29 out of 72 microbiology lab workers were susceptible for HBV infection. We found having a tattoo, ear & nose piercing and dentistry treatment were significantly associated with HbsAg Cero positivity. Reuse of needle without proper sterilization is the main cause in the lab. Male to male sex was not reported by any other case. Acupuncture is not common here and was not reported by anybody. Haemodialysis is a risk factor for HBS As but no case was reported. None of the subjects reported history of organ transplantation. There are many potential limitations to our study. Lack of awareness regarding the disease in general population and population based nature of study has limitation. Second potential recall bias regarding the risk factors like unsafe injections. Third we excluded children less than 5 years because of technical difficulty of blood collection for test. Occult and cured infections could not be diagnosed.

CONCLUSION:

In conclusion, the result of this thesis sheds light on many important aspects of demographic and epidemiological aspects of HBV infection. These are very much important for identifying the population at risk of acquiring HBV and developing chronic liver diseases and also pose a risk of transmission through different modes. This information are essential for detecting the risk factors associated with HBV infection to formulate necessary preventive measures to lessen the burden of new infection and spread. As the HBV and HBC remain undiagnosed diseases, awareness should be created regarding the infections to the public who are at risk like Healthcare workers and Microbiology Lab workers etc. There is urgent need to form new policies and strategies to implement this. Educating common people regarding mode of transmission of Hepatitis B & C will help reduce infection.

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