



Seroprevalence of Hepatitis B Surface Antigen and Hepatitis C in Blood Bank from Gujarat- A Seven Year Study

Authors

Dr Faruq I. Mulla¹, Dr Broma B. Patel², Dr Qurrat Ul Aein Khoja³

¹Associate Professor, Dept of Pathology, Pramukhswami Medical College Karamsad-388325, Gujarat
Email: drfm24@gmail.com

²Resident, Department of Pathology, Pramukhswami Medical College Karamsad -388325, Gujarat
Email: bromabp@charutarhealth.org

³Resident, Dept of Pathology, Pramukhswami Medical College Karamsad -388325, Gujarat
Email: qurratuk@charutarhealth.org

Abstract

Background: Hepatitis B virus is the most important causative agent of transfusion associated hepatitis. The virus is highly infectious and minute amounts as little as 0.00001ml can transmit the infection. Hepatitis C virus is the major cause of post transfusion hepatitis. It is estimated that 3 per cent of the world's population or almost 200 million individuals have chronic HCV infection.

Aim: To know the prevalence of Hepatitis C (HCV) and Hepatitis B (HBsAg) in blood donors at A.D. Gorwala Blood Bank from 2005 to 2011.

Methods: This study was conducted in A.D. Gorwala Blood Bank, Karamsad, Gujarat. The test for HbsAg and HCV were by using 3rd generation ELISA kits. Last seven years data were retrieved for prevalence

Results: The HBV in A.D. Gorwala Blood Bank from year 2005 to 2011 was 0.51% & prevalence of HCV was 0.19%.

Conclusion: This study highlights the HBV and HCV infection rate in this part of country and shall provide reference to future studies on epidemiology of HBV infection.

Keywords: ELISA, Transfusion, Prevalence.

Introduction

Hepatitis B virus was discovered by Blumberg et.al. also called as Australian antigen.^[1] The average estimated carrier rate of Hepatitis B virus in India is 4% with a total pool of approximately 36 million carrier.^[2] India lies in an intermediate HBV endemicity zone and the number of HBV carriers is estimated to be 50 million, forming the second largest global pool of chronic HBV infections.^[3] HBV prevalence in general popula-

tion in India is 2% to 8% and 1% to 2% in the blood donors, according to various studies.^[4] The prevalence of HBV in Gujarat state is 1.07%.^[5]

HCV is a 50-60nm virus with a linear, single stranded RNA genome, enclosed within a core and surrounded by an envelope, carrying glycoprotein spike.^[6] Hepatitis C virus (HCV) is the major cause of post transfusion hepatitis. It is estimated that 3 per cent of the world's population or almost 200 million individuals have chronic

HCV infection^[7] The global seroprevalence of HCV among blood donors varies from 0.4-19.2 percentage.^[8] The seroprevalence of HCV in voluntary blood donors in India is between 0.12-4 per cent^[8] Currently the seroprevalence of anti-HVC is 0.4%^[9]

Materials and Methods

This is retrospective study approved from the Human Research Ethics Committee (HREC) of the H.M.Patel center for medical care and education, Pramukhswami medical college, Karamsad. The study was carried out at A.D.

Gorwala blood bank of central diagnostic laboratory in Shree Krishna Hospital, Karamsad. Study design: It is a retrospective study where data of previous seven years was collected. Hepatitis B surface antigen (HBsAg) and HCV was detected using Enzyme linked Immunosorbent Assay Technique (HEPALISA which is Microwell ELISA Test for detection of Hepatitis B Surface Antigen [HBsAg] in Human Serum/Plasma), manufactured by Mitra & Co. Pvt. Ltd. New Delhi.^[10,11] Chi square test was used to calculate p value. No statistical software was used.

Prevalence of HBV or HCV

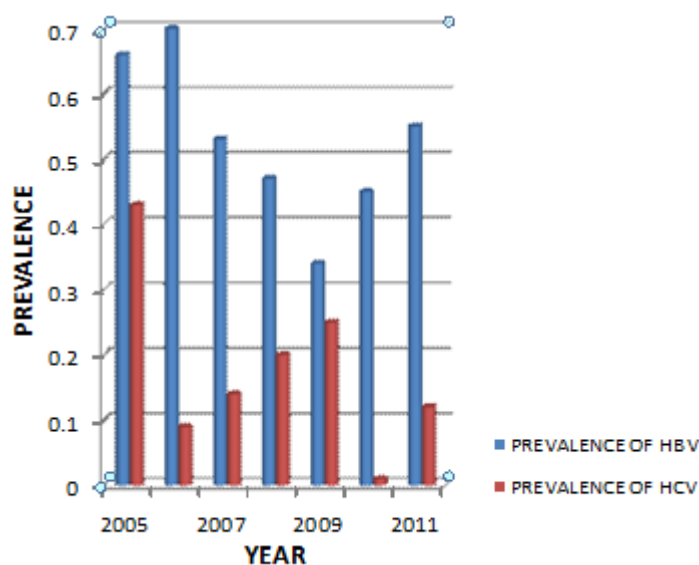
Table: 1

Year	Total Donor	Positive HBV	Prevalance of HBV (%)	Positive HCV	Prevelance of HCV (%)
2005	3461	23	0.66	15	0.43
2006	4103	29	0.70	04	0.09
2007	4114	22	0.53	06	0.14
2008	4853	23	0.47	10	0.20
2009	5477	19	0.34	14	0.31
2010	6363	29	0.45	10	0.22
2011	6468	36	0.55	08	0.17
Total	34839	181	0.51	67	0.19

Out of 34839 donors 181(0.51%) of them were positive for HBV and 67(0.19%) of them were positive for HCV.

Prevalence of HBV or HCV

Fig: 1



Gender wise distribution of donors show in Table 2 and 3 and Fig 2 and 3.

Gender wise Distribution of Patient

For HBV

Table: 2

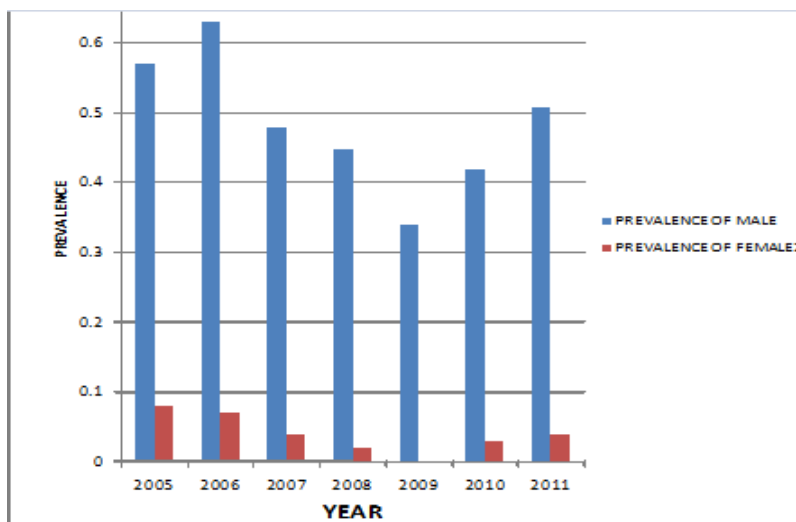
Year	2005(%)	2006(%)	2007(%)	2008(%)	2009(%)	2010(%)	2011(%)
Male	20(0.57)	26(0.63)	20(0.48)	22(0.45)	19(0.34)	27(0.42)	33(0.51)
Female	03(0.08)	03(0.07)	02(0.04)	01(0.02)	00(0.000)	02(0.03)	03(0.04)

Out of 34839 donors 167(0.47%) of them were man which positive for HBV positive and 14(0.04%) of them were women which positive for HBV.

Gender wise Distribution of Patient

For HBV

Fig: 2



Gender wise Distribution of Patient

For HCV

Table: 3

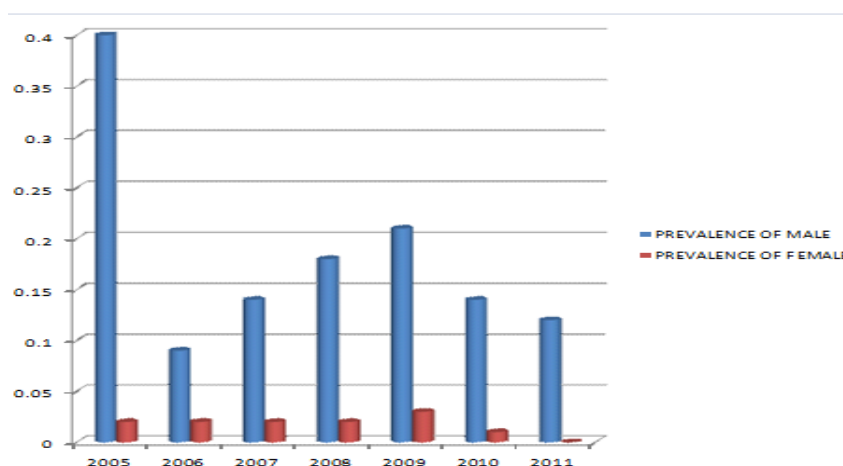
Year	2005(%)	2006(%)	2007(%)	2008(%)	2009(%)	2010(%)	2011(%)
Male	14(0.40)	04(0.09)	06(0.14)	09(0.18)	12(0.21)	09(0.14)	08(0.12)
Female	01(0.02)	01(0.02)	01(0.02)	01(0.02)	02(0.03)	01(0.01)	00(0.00)

Out of 34839 donors 60(0.17%) of them man which positive for HCV and 7(0.02%) of them women positive for HCV.

Gender wise Distribution of Patient

For HCV

FIG:3



Age wise distribution of donors shoe in Table 4 and 5 and Fig 4 and 5.

Age wise Distribution of Patient

For HBV

Table:4

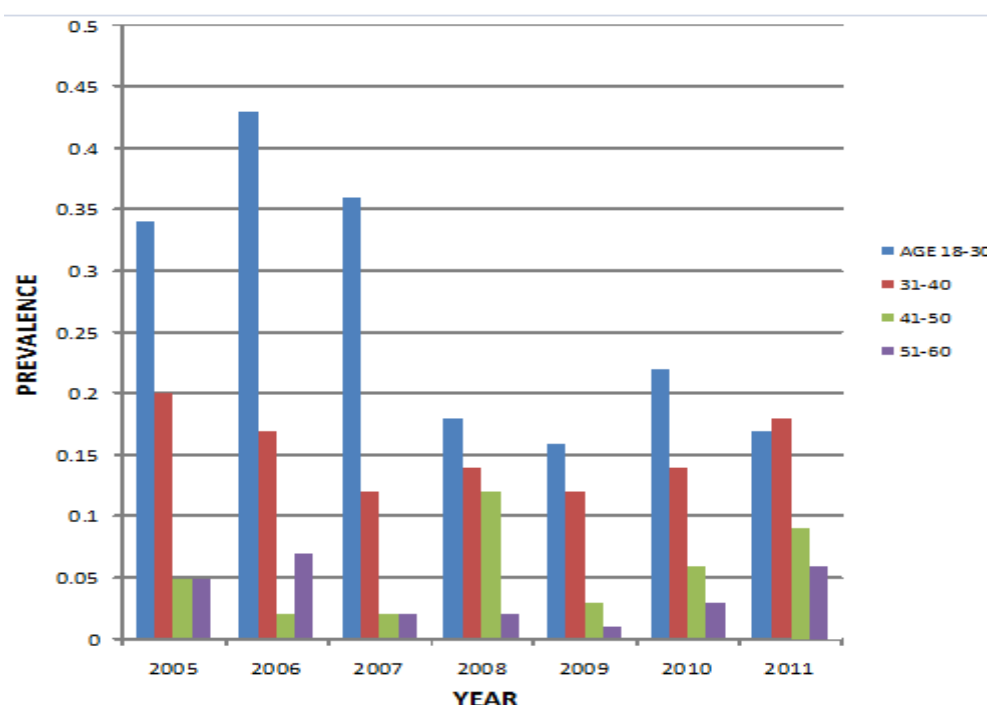
Year	2005(%)	2006(%)	2007(%)	2008(%)	2009(%)	2010(%)	2011(%)
Age 18-30	12(0.34)	18(0.43)	15(0.36)	09(0.18)	09(0.16)	14(0.22)	11(0.17)
31-40	07(0.20)	07(0.17)	05(0.12)	07(0.14)	07(0.12)	09(0.14)	12(0.18)
41-50	02(0.05)	01(0.02)	01(0.02)	06(0.12)	02(0.03)	04(0.06)	06(0.09)
51-60	02(0.05)	03(0.07)	01(0.02)	01(0.02)	01(0.01)	02(0.03)	04(0.06)

Out of 34839 donors 88(0.25%) of them positive for HBV in age between 18-30, 54(0.15%) of them positive for HBV in age between 31-40, 22(0.06%) of them positive for HBV in age between 41-50,13(0.03%)of them positive for HBV in age between 51-60.

Age wise Distribution of Patient

For HBV

FIG: 4



Age wise Distribution of Patient

For HCV

Table:5

Year	2005(%)	2006(%)	2007(%)	2008(%)	2009(%)	2010(%)	2011(%)
Age 18-30	06(0.17)	02(0.04)	03(0.07)	04(0.08)	05(0.09)	06(0.06)	04(0.06)
31-40	05(0.14)	01(0.02)	00(0.00)	05(0.10)	05(0.09)	02(0.03)	02(0.03)
41-50	03(0.08)	01(0.02)	02(0.04)	01(0.02)	02(0.03)	00(0.00)	01(0.01)
51-60	01(0.02)	00(0.00)	01(0.02)	00(0.00)	02(0.03)	02(0.03)	01(0.01)

Discussion

The prevalence of infection among blood donors has been used as a surrogate marker for the prevalence of infection in the population at large population^[12]

In present study, seven years data were assessed which contain total prevalence of HBV in A.D. Gorwala Blood Bank is 0.51%. In 2005 the prevalence is 0.66%, in 2006 the prevalence is 0.70%, in 2007 the prevalence is 0.53%, in 2008

the prevalence is 0.47%, in 2009 the prevalence is 0.34%, in 2010 the prevalence is 0.45%, and in 2011 the prevalence is 0.55%. The total prevalence of male is 0.47%. In 2005 the male prevalence is 0.57%, in 2006 the prevalence is 0.63%, in 2007 the prevalence is 0.48%, in 2008 the prevalence is 0.45%, in 2009 the prevalence is 0.34%, in 2010 the prevalence is 0.42%, and in 2011 the prevalence is 0.51%. The prevalence of female is 0.04%. In 2005 the female prevalence is 0.08%, in 2006 the prevalence is 0.07%, in 2007 the prevalence is 0.04%, in 2008 the prevalence is 0.02%, in 2009 the prevalence is 0.00%, in 2010 the prevalence is 0.03%, in 2011 the prevalence is 0.04%.

The total prevalence of HCV in A.D. Gorwala Blood Bank is 0.19%. In 2005 the prevalence is 0.43%, in 2006 the prevalence is 0.09%, in 2007 the prevalence is 0.14%, in 2008 the prevalence is 0.20%, in 2009 the prevalence is 0.25%, in 2010 the prevalence is 0.01%, and in 2011 the prevalence is 0.12%. The total prevalence of male is 0.17%. In 2005 the male prevalence is 0.40%, in 2006 the prevalence is 0.09%, in 2007 the prevalence is 0.14%, in 2008 the prevalence is 0.18%, in 2009 the prevalence is 0.21%, in 2010 the prevalence is 0.14%, and in 2011 the prevalence is 0.12%. The prevalence of female is 0.02%.

K.V. Ramani et al^[5] reported the prevalence of HBV and HCV. He included data of last eight (1998-2005) Years. The total prevalence of HBV is 1.17%. In his study the prevalence of HBV in 1998 is 1.38%, in 1999 is 1.31%, in 2000 is 1.07%, in 2001 is 1.24%, in 2002 is 1.11%, in 2003 is 1.15%, in 2004 is 1.09%, in 2005 is 1.07%.

The total prevalence of HCV is 0.34%. In his study the prevalence of HCV in 1998 is 0.46%, in 1999 is 0.42%, in 2000 is 0.44%, in 2001 is 0.45%, in 2002 is 0.39%, in 2003 is 0.35%, in 2004 is 0.43%, and in 2005 is 0.23%.

In present study the prevalence of HBV and HCV is 0.51% and 0.19% respectively. In K.V. Ramani study the prevalence of HBV and HCV in Gujarat

is 1.17% and 0.34% respectively. In his study the prevalence of HBV and HCV in Anand is 0.47% and 0.23% respectively.

The male gender is affected more with HBV and HCV. The age group of 18-30 years are infected more with HBV and HCV.

Conclusion

To assess the magnitude and dynamics of disease transmission and for its prevention and control, the study of its seroprevalence is important. The patients attending our hospital represent a mix of poor and rich as well as urban and rural population. This study shows that prevalence of hepatitis B was not uncommon in this part of the country and found to be high and most commonly observed in young males.

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