

Prevalence of Hepatitis B in Kargil, Ladakh; Community Based study from a rural area of Jammu and Kashmir.

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ABSTRACT

Background: Hepatitis B is a major public health problem worldwide. In India the prevalence of hepatitis B surface antigen varies from 1-13% with an average of 4.7%. **Objectives:** This cross sectional field study was undertaken to estimate the prevalence of hepatitis B in Kargil district of Ladakh. **Methods:** Serum markers of HBV (HBS) was tested after taking 3ml of blood with consent using Rapid One Step (SD HbsAg Biolines, Standard Diagnostic, Inc. – Hepatitis B one step test with a relative sensitive and specificity of 100% and 100% respectively. All the positive Sera was re-assessed in duplicate to confirm the diagnosis by ELISA. **Results:** In this study 700 healthy subjects aged 11-60 years (mean age 24.9 years), were studied for HBsAg positivity. In our study there were 400 males and 300 females. The male to female ratio was 1.33. Majority of our studies subjects belonged to the age group 11-30 years comprising 76.7% of the total subjects. The 700 healthy subjects tested for hepatitis B surface antigen, 55 were found positive for HBsAg giving a prevalence of 7.86%. Age specific exposure to hepatitis B virus was highest in younger age group (11-30 years). **Conclusion:** This community based study shows a high prevalence of hepatitis B in Kargil district of Ladakh with highest prevalence being in younger age (11-30 years). Further studies are needed to assess the risk factors responsible for high prevalence of Hepatitis B in this geographical location.

Keywords: Prevalence, population.

INTRODUCTION

Hepatitis B is a major public health problem in India. Prevalence of HBsAg in general population, may vary from <0.5% in developed countries to over 40% in developing countries¹. Globally 5% of world population is believed to carry hepatitis B infection. Globally prevalence of hepatitis B is divided into 3 zones depending on carrier rate, (i) low (<2%), (ii) intermediate (2-8%), (iii) high (>8%). Of the 350 to 400 million individuals infected with hepatitis B virus 1/3rd reside in China. Hepatitis B virus is known to be highly infective and associated with long term morbidity and mortality due to complications like cirrhosis, portal hypertension and hepatocellular carcinoma. Prevalence of hepatitis B surface antigen in India varies from 1-13% with an average of 4.7%.^[2-6] High prevalence rates of hepatitis B surface antigen have been noted among Indian tribal population. There are only a few

Community based studies that have looked into the prevalence of hepatitis B infection, hence the present study was undertaken to estimate the prevalence of hepatitis B in Kargil district.

Objective

Kargil, a remote area in J&K state of India, stands at an altitude of more than 9600 feet above the sea level, sharing its borders with Pakistan and China with a population of about 1,40,000 is the only Muslim majority district in Ladakh was taken for the study of prevalence of this disease. No study of such a kind so far has been conducted in this region. It was deemed relevant and necessary to conduct this study to know the burden of this disease in this remote area. The purpose of this study was to estimate the prevalence of hepatitis B in Kargil district of Ladakh population.

MATERIALS AND METHODS

The study was performed on a healthy population of Kargil district of Ladakh region. People with a history of hepatitis B vaccine were excluded. A multi-stage sample procedure was adopted for the survey. Three blocks were chosen for the study

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purpose including Kargil block, with maximum population, Drass block and Panikhar block with minimum population. Randomization was done in such a manner to include 10% of all households in selected villages and mohallas of the blocks. From the selected households prevalence of hepatitis B was estimated. Sample size was calculated on the basis of population of the blocks (60,000), presumed prevalence of 4-5% average, limits 1%-13%, confidence level of 99% (n=377), adding 10% non-response rate, total sample would be 418. [WHO software epi info version 6 November 1993; Sampling by W.C. Cochran; www.survey.system.com]. A total of 700 subjects were taken for study. The selected households were visited and after proper introduction and permission with the head of family. The purpose of the visit was explained to them. They were requested to motivate other members of the house to participate in this study. After doing this exercise in the village the individuals were requested to assemble in a local school / health centre. The individuals who reported were given a questionnaire to fulfill and 3ml of blood was taken under all aseptic precautions and subjected to HBsAg detection.

Microbiological Method

Serum markers of HBV (HBS) was tested after taking 3ml of blood with consent using Rapid One Step (SD HbsAg Biolines, Standard Diagnostic, Inc. – Hepatitis B one step test with a relative sensitive and specificity of 100% and 100% respectively. All the positive Sera was re-assessed in duplicate to confirm the diagnosis by ELISA.

RESULTS

In this study 700 healthy subjects aged 11-60 years were studied for HBsAg positivity. In our study there were 400 males and 300 females. Majority of our studied subjects belonged to age group of 11-30 years comprising 76.7% of the total subjects. We screened 3 blocks of Kargil district of Ladakh region namely Kargil block, Panikhar block and Drass block. Majority of our studied subjects were from

Kargil block 497 (71%) and least from Panikhar block 100 (14.29%). Out of 700 studied subjects 362 were unmarried, 338 married and 470 were illiterate whereas 230 were literate. Majority of the participants in the study were labourers by profession (335). Ethnically Kargil district of Ladakh region has three main religions namely Shia Muslims, Sunni Muslims and Non-Muslims (Buddhists etc). Out of 700 subjects 622 (88.86%) were Shia Muslims, 42 (6%) were Sunni Muslims, whereas 36 (5.14%) were mainly Buddhists. Prevalence of HBsAg was found to be 7.86%. Prevalence of HBsAg in Kargil, Drass and Panikhar blocks were found to be 8.0%, 9.12% and 5.0% respectively with OR = 1.46, P = 0.19 [Table and Figure 1]. Also, prevalence of HBsAg was 9% in males, 6.33% in females, 8.71% in age group of 11-30 years, 7.36% in the age group of 31-60 years [Table and Figure 2] (OR =2.74, P = 0.19). Prevalence of HBsAg was 9.1% in married, 6.63% in unmarried (OR = 1.42, P = 0.21). HBsAg positivity was 8.2% in Shia community, 5.56% in non-Muslims, 4.7% in Sunni Muslims (OR = 1.65, P = 0.024) [Table and Figure 3], 8.72% in illiterate, 6.09% in literate (OR = 1.47, P = 0.22), 9.25% in labourers, 7.41% in skilled workers, 6.17% in household workers P = 0.36). Among pregnant females HBsAg prevalence was 14.29% compared to 7.3% in rest of the females (OR = 2.74, P = 0.121).

[Table 1] shows prevalence of HBsAg positivity was 8.05% in Kargil block, 5% in Parnikhar block and 9.71% in Drass block. Highest prevalence of 9.71% was found in Drass block. However the difference was not statistically significant.

[Table 2] shows likelihood of HBsAg positivity among age group of 11-30 years was 2.74 times more than age group of 31 to 60, however the difference was not statistically significant.

[Table 2] shows likelihood of HBsAg positivity among Shia community was 1.65 times more likely than the Sunni and Non-Muslim population, but the difference was statistically not significant.

Table 1: HBsAg in relation with Geography of the Studied Population

Block	Total Subjects	HBsAg Positive				HBsAg Negative				P value
		Male	Female	Total	%	Male	Female	Total	%	
Kargil	495	25	15	40	8.08	260	197	457	91.92	0.938 (NS)
Panikhar	100	4	1	5	5.00	51	44	95	95.00	

Drass	103	7	3	10	9.71	5	3	40	93	90.29	
Total	700	36	19	55	7.86	68	44	281	645	92.14	

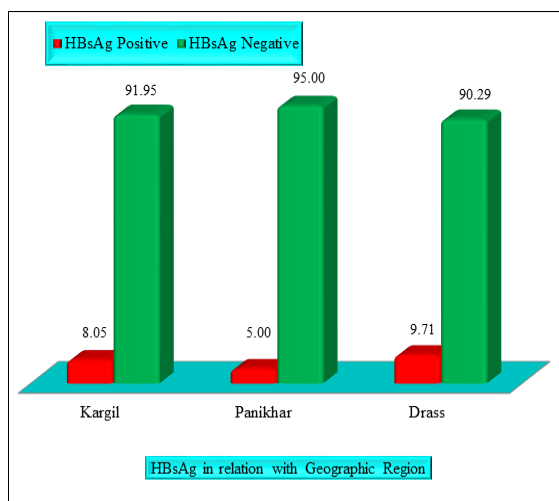


Figure 1: HbsAg in relation with Geographical Region.

Table 2: HBsAg in relation with Age (yr) of the Studied Population.

Age (yr)	Total Subjects	HBsAg Positive		HBsAg Negative		p value
		n	%	n	%	
11 to 30	537	43	8.01	494	91.99	0.190
31 to 60	163	12	7.36	151	92.64	
Total	700	55	7.86	645	92.14	

Odds Ratio = 2.74

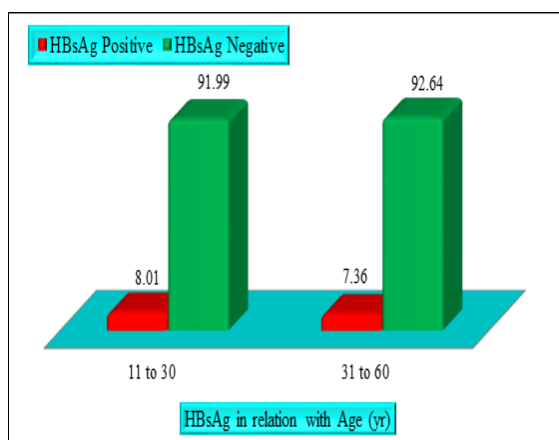


Figure 2: HbsAg in relation with Age.

Table 3: HBsAg in relation with Community of the Studied Population.

Community	Total Subjects	HBsAg Positive		HBsAg Negative		p value
		N	%	n	%	
Shia Muslim	622	51	8.20	571	91.80	0.347 (NS)
Sunni Muslim	42	2	4.76	40	95.24	
Non-Muslim	36	2	5.56	34	94.44	
Total	700	55	7.86	645	92.14	

Odds Ratio = 1.65

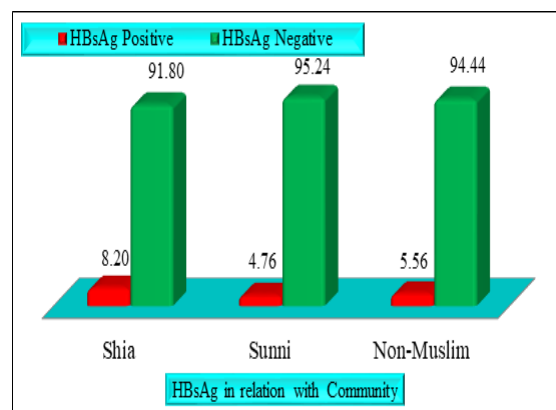


Figure 3: HbsAg in relation with Community.

DISCUSSION

Hepatitis B infection is among the leading 10 causes of death in the world. Of the 300 to 400 million individuals infected with hepatitis B infection 1/3rd reside in China (WHO/CDC/CSR/LYO/2002.2: Hepatitis B). Only a small proportion of acute hepatitis B virus infection are recognized clinically with less than 1% children and 30-50% adults developing icteric disease. Persistent hepatitis B virus infection is sometimes associated with histologically normal liver and normal liver function tests. At least one third of chronic hepatitis B infection are associated with cirrhosis and hepatocellular.

Kargil district of Ladakh is geographically spread over a treacherous terrain with poor connectivity, very harsh climate and less than ideal health care facilities. Most of the area remains cut-off from the rest of the state and country, due to heavy snow, and extreme cold conditions for upto 8 months in a year. This situation forces the population to live almost exclusively indoor life with close contact among the family members for most of the year. The living conditions and hygiene are also compromised during harsh winter months.

Our study was carried out on 700 healthy population sample. International reported prevalence studies have been conducted on sample size ranging from 157 Warsaw (Poland), 478 Moscow (USSR), 354 Gottingen (FRG), 605 Bangkok (Thailand), 2620 Athens (Greece).

Out of 700 subjects mean age + SD was (24.9+9.3 years). There were 400 males with mean age + SD (25.7+8.9 years) and 300 females with mean age + SD (24.9+9.3 years). Majority of our subjects (71%) were from the Kargil block, which is the biggest of the seven blocks of the district Kargil. The majority of our subjects (76.71%) were in the age group of 11-30 years. Other studies in which majority of subjects were in the age group of 10-30 years include Egypt (60.22%), Bangkok Thailand (60.3%), Izmer and Turkey (59.98%).^[7] Out of 700 sera-tested 55 were positive for HBsAg giving a prevalence of

7.86%. The global prevalence of HBsAg positivity is believed to be 5%. The world can be divided into low prevalence area (<2%), intermediate prevalence area (2-8%), high prevalence area (>8%) depending on hepatitis B carrier rate.

Our results reveal that Kargil district of Ladakh of Jammu and Kashmir State (India) is coming in the intermediate prevalence range almost falling into high prevalence zone.

This confirms the observation by local physicians and practitioners that the prevalence of hepatitis B in Kargil district of Ladakh is higher than many other places in the world. The highest HBsAg positivity in our study was in the age group of 21-30 years in which 10.3% were HBsAg positive followed by age group of 31-40 years with 9.17% positivity for HBsAg. Together these age groups 21-40 years had HBsAg positivity of 11.1%, which was much higher than the prevalence in the rest of the age groups (5.6%). However there was no statistical significance among different age groups.

Studies from India have shown HBsAg prevalence of 5.3% in a village of Birbhum district in west Bengal by Choudhury A, Santra A et al. (1999 April-June),^[8] 5.7% in Tamil Nadu by T. Kurien, Thyagarajan, L. Jahaseelan et al (2005),^[9] 5.9 to 10.5% in tribal populations by RC Jain (1992).^[10]

Outside India prevalence of HBsAg which was more or less consistent with our observations reported in the study by S. Punyagupta et al (1973) who found HBsAg prevalence of 10% in Thai adults,^[11] 10.48% reported by Jean Paul Boutin Francois Flye Sainte Marie et al (March 1990) in population of the Austral Island group in French Polynesia.^[12] HBsAg prevalence in our study was higher in men (9.0%) than in women (6.33%). However the difference was not statistically significant. This goes with studies in most countries where HBsAg positivity was more in men than women in the study in Dakar (Senegal) male 12.3%, female 9.4%, Bangkok (Thailand) males 12.5%, females 6.7%, Poona (India) males 7.2%, females 5.2%, Izmir (Turkey) males 10.5%, females (7.4%), Tokyo (Japan) males 2.3%, females 2%, Athens (Greece) males 10.1%, female 8.4%.^[7] Ethnically Kargil district of Ladakh region is populated mainly by Shia Muslims (75%), Sunni Muslims (10%) and remaining are non-Muslim groups.

In our study HBsAg positivity was more in Shia Muslims (8.2%) as compared to Sunni Muslims (4.76%) or non-Muslims (5.56%). Although the difference was statistically insignificant, the higher prevalence of HBsAg among Shia Muslims could be due to certain factors. One possible reason is the practice of "Self Flagellation" by Shia Muslims in the Holy Islamic month of Muharram. During Muharram Shia Muslims practice "Self Flagellation" as a religious obligation / rituals. During "Self Flagellation" a metallic chain with multiple knife-lets attached at one end is used to repeatedly inflict

injuries on the body especially back of the trunk. These blood contaminated chains / knife-lets are shared by other members of the family / community to inflict injuries on themselves especially during the annual Moharram procession. We believe this could be one of the reasons for higher prevalence of HBsAg among Shia Muslims.

In our study, out of 300 females studied there were 21 pregnant females, out of these 3 (14.29%) were HBsAg positive. This was higher than the non-pregnant females (5.73%). However the difference was not statistically significant. Our study also found high percentage of HBsAg positivity in illiterate, labourers, married, subjects with unprotected sex, blood transfusion recipients. However the difference was not statistically significant ($p > 0.05$).

CONCLUSION

This community based study shows a high prevalence of hepatitis B in Kargil district of Ladakh with highest prevalence being in younger age (11-30 years). Further studies are needed to assess the risk factors responsible for high prevalence of Hepatitis B in this geographical location.

REFERENCES

1. Kulkarni AG, Aloowaja FO and Wayo GB. Prevalence of HBsAg in northern Nigerian blood donors. *Vox Sang* 1986; 50: 151.
2. Thyagarajan SP, Jayaram S, Mohanavalli B. Prevalence of HBV in general population of India. In: Sarin SK, Singhal AK, editors. *Hepatitis B in India. Problems and Prevention*. New Delhi: CBS; 1996. P. 5-16.
3. Jain RC, Bhat SD, Sangle S. Prevalence of hepatitis surface antigen among rural population of Loni area in Ahmed Nagar district of Western Maharashtra. *J Assoc Physicians India* 1992; 40: 390-1.
4. Pal SR, Chitkara NL, Choudhury S, Dutta DV, Deodhar SD, Chuttani PN. Hepatitis B virus infection in northern India. Prevalence, subtypes and seasonal variation. *Bull World Health Organ* 1974; 51: 13-7.
5. Sobeslavsky O. Prevalence of markers of hepatitis B virus infection in various countries: a WHO collaborative study. *Bull World Health Organ* 1980; 58: 621-8.
6. Tandon BN, Irshad M, Raju M, Mathur GP, Rao MN. Prevalence of HBsAg and anti-HBs in children and strategy suggested for immunization in India. *Indian J Med Res* 1991; 93: 337-9.
7. O Sobeslavsky. Prevalence of marker's of HBV infection in various countries; WHO Collaborative Study. *Bull WHO* 1980; 58: 621-628.
8. Chowdhury A, Santra A, Chaudhuri S, Ghosh A, Banerjee P, Mazumder DN. Prevalence of hepatitis B infection in the general population: a rural community based study. *Top Gastroenterol* 1999 Apr-June; 20(2): 75-77.
9. T. Kurien, S. P. Thyagarajan, L. Jahaseelan, A. Peedicayil, P. Rajendran, S. Sivaram, S. G. Hansdak, G. Renu, P. Krishnamurthy, K. Sudhakar, J. C. Varghese and STD Study Group. Community prevalence of hepatitis B infection and modes of transmission in Tamil Nadu, India. *Indian J Med Res* May 2005; 121: 670-675.

10. R. C. Jain. Prevalence of HBsAg among tribal population of Udaipur District of Southern Rajasthan. *Indian J Med Microbiol* 1992; 10(4): 257-259.
11. S. Punyagupta, LC Olson et al. Epidemiology of HBsAg in a high prevalence area. *Am J Epid* 1973; 97: 349-353.
12. Jean-Paul Boutin, Francois Flye Sainte Marie, Jean Louis Cartell, Richard Cardines, Marc Girrard, Jean Roux. Prevalence of hepatitis B virus infection in the Austral archipelago, French Polynesia: identification of transmission patterns for the formulation of immunization strategies. *Tropical Med & Hygiene* March 1990; 84(2): 283-287. declared

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