



Frequency of HCV, Hbs Ag & HIV in general population Lahore Pakistan

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Abstract

Objective: the aim of this study was to investigate the frequency of hepatitis c infection hepatitis b infection and AIDS in general population in Lahore Pakistan. **Methods:** General population without specification of age and gender was included. Blood samples were collected and immunochromatographic strip methods were performed for detection of HCV HbsAg and HIV. HEXAGON HBsAg 1-STEP - Omega Diagnostics kit (catalog number OD047) was used for the qualitative detection of HbsAg in human serum or plasma. Hexagon HBsAg is a 1-step test for the qualitative detection of hepatitis B surface Antigen (HBsAg) in human serum or plasma. The test is based on an immunochromatography. Genomix HCV One Step test device (Catalog number: GNM 02-07-220) was used for the detection of HCV. The HCV one step test device is a qualitative, membrane based immunoassay for the detection of antibody to HCV in serum or plasma. The HCV one step test device is a qualitative, membrane based immunoassay for the detection of antibody to HCV in serum or plasma. **Results:** A total of 80 participants were taken. There are 40 HCV positive persons and 40 HCV negative persons. HbsAg positive persons are 21 and there are 59 HbsAg negative persons. HIV positive persons are 2 and 78 persons are HIV negative. **Conclusion:** This study shows a significant trend toward these viral diseases.

Keywords: Hepatitis C infection, Hepatitis B infection, AIDS (Acquired immunodeficiency syndrome), Immunochromatography.

Introduction

Hepatitis C caused by blood borne pathogen the Hepatitis C Virus. Health care facilities in the Khyber pakhtunkhawa are not of high quality so chances of HCV infections have increased. HCV infection is becoming a major public health problem, with an estimated global prevalence of 3% occurring in about 180 million carriers and approximately 4 million

people have been newly infected annually. (Ali, et al., 2011).

Hepatitis C virus (HCV) was first identified in 1989 when it was found to be the primary causative agent of non-A, non-B hepatitis, associated with high rates of progressive, end-stage liver disease. Since then,

appreciation of the significant worldwide health impact of HCV infection has grown. HCV is mainly transmitted by blood transfusion. The introduction of routine screening for HCV in blood donors (1990) contributed significantly to the control of HCV transmission. **(Jabbari, Besharat & Khodabakhshi, 2008).**

Diagnosis of hepatitis C virus infection is based on documented anti HCV antibodies. A small proportion of acute HCV infections (and chronic infections as well) are serum negative as determined by ELISA. This can occur in patients with impaired immunity, which cannot generate a detectable level of anti HCV antibodies or in whom antibody production is delayed. HCV-RNA detection by a sensible method when anti HCV antibodies tests are negative, suggests an acute HCV infection, especially when it is followed by anti HCV serum conversion. **(FA & L, 2006)**

Early identification of patients with acute HCV infection is important for their optimal management. The rate of chronic evolution is 50–90%, and the natural course of chronic hepatitis C can be associated with severe complications. The treatment of hepatitis C has dramatically improved over the past decade. Unlike any other chronic viral infection, a significant proportion of patients with chronic hepatitis C can be cured. However, the current standard therapy pegylated interferon alpha and ribavirin has its limitations. Limited efficacy in patients with hepatitis C virus (HCV) genotype 1 and the side effect profile will necessitate the development of new therapeutic approaches. This review describes the efficacy and optimization of the current standard therapy of hepatitis C and its problems in special patient populations. New treatment directions beyond interferon alpha based therapies are on the horizon. **(Manns, et al., 2005)**

An estimated HCV prevalence of 3.9 million people was found in the United States with 2.7 million people found to have chronic infection with HCV (positive HCV RNA). Neither sex nor racial-ethnic group was found to be independently correlated with HCV infection. However, a majority of patients that were HCV positive were below the age of 50. **(Sy & Jamal, 2006)**

There are approximately 71,250 people living with HIV and AIDS in Nepal and the estimated national HIV prevalence rate is 0.39%. The risk of HIV infection among children and adolescents, especially those living on the streets, may be especially high due

to their marginalized social and economic situations, as well as the existence of commercial sex and exchange sex (for food, shelter and other needs), along with intravenous drug use and other high risk behaviors in this population. However, there has been no official study carried out to ascertain the actual prevalence of HIV infection in this population. **(K dibesh. et al. 2012).**

Although stigma is considered a major barrier to effective responses to the HIV/AIDS epidemic, stigma reduction efforts are relegated to the bottom of AIDS program priorities. The complexity of HIV/AIDS related stigma is often cited as a primary reason for the limited response to this pervasive phenomenon. In this paper, we systematically review the scientific literature on HIV/AIDS related stigma to document the current state of research, identify gaps in the available evidence, and highlight promising strategies to address stigma. We focus on the following key challenges: defining, measuring, and reducing HIV/AIDS related stigma as well as assessing the impact of stigma on the effectiveness of HIV prevention and treatment programs. Based on the literature, we conclude by offering a set of recommendations that may represent important next steps in a multifaceted response to stigma in the HIV/AIDS epidemic. **(Manish P. et al. 2010)**

Hepatitis B viruses (HBV) are very serious public health problems. 2 billion individuals infected worldwide and 350 million with chronic HBV infection. The World Health Organization estimates that 500,000 to 1.2 million deaths each year are due to HBV related chronic liver disease and this infection is the tenth leading cause of death. Hepatitis B infection can occur in all age groups and its transmission is complicated. **(Hamissi & Hamissi, 2011)**

Occult hepatitis B virus (HBV) infection can be defined as the presence of HBV DNA in the liver and/or blood in the absence of detectable serum HBs Ag. There is a high prevalence of occult HBV infection in dialysis patients. **(T et al. (2010)**

HBV is classified in the family Hepadnaviridae. It occurs as seven distinct genotypes, designated A to G. HBV has a double-stranded DNA genome of approximately 3200 base pairs organized into four partially overlapping open reading frames, which encode the envelope, core, polymerase and X proteins. The envelope proteins are surface glycoprotein collectively designated as HBsAg. In virus-infected liver cells, HBsAg is produced in excess and secreted

into the blood, where it serves as a marker for active infection and infectivity. (Krajden, et al., 2005)

HBV infection is associated with sufficient changes in the serum levels of hepatitis B antigens and antibodies that are responsible for different clinical states. Hepatitis B surface antigen and antibody Hepatitis B surface antigen (HBsAg) is the serologic hallmark of HBV infection. It can be detected by radioimmunoassay (RIA) or enzyme immunoassays (EIA). (Hussain, et al., 2003)

The only generally approved treatment for chronic hepatitis B was alpha interferon, which is a natural antiviral agent but acts primarily by immunomodulation. Interferon treatment is associated with considerable but tolerable side effects in approximately 90% of patients. (Schalma, et al., 2000)

Chronic infections with HBV and HCV are associated with serious health risks due to hepatic cirrhosis and hepatocellular carcinoma. Global data indicate that the prevalence of HBV and HCV infection is high in populations of Africa and the Middle Eastern regions. HCV infection was estimated by World Health Organization to affect 4.6% of the Eastern Mediterranean population and 5.3% of the population of Africa. (Alashek, et al., 2012)

Materials and Methods

It was an experimental study conducted at Nishter town Lahore Pakistan. The data was consisted on 80 persons without specification of age and gender. These persons were randomly taken from targeted area. About 3 ml of blood sample was collected by a clean venipuncture. The blood was allowed to clot at room temperature for HCV and HbsAg and HIV detection. Samples were centrifuged at 2000 rpm for 2 min and serum was separated. Serum was processed with immunochromatography technique for detection of HIV, HbsAg and HCV antibodies and results were analyzed by using Microsoft excel software. Hemolysed samples were rejected. Patient blood was tested for HCV antibodies, HbsAg and HIV by immune chromatographic technique.

Detection of hepatitis B virus by screening Principle

HEXAGON HBsAg 1-STEP - Omega Diagnostics kit (catalog number OD047) was used for the qualitative detection of HbsAg in human serum or plasma.

Hexagon HBsAg is a 1-step test for the qualitative detection of hepatitis B surface Antigen (HBsAg) in human serum or plasma. The test is based on an immunochromatography. HBsAg present in serum or plasma reacts with colloidal gold particles which have been coated with monoclonal anti-HBs antibodies and with haemocyanine. The resulting immunocomplexes migrate along the membrane and are bound in the test zone by a second monoclonal anti-HBs antibody which is fixed there in form of a horizontal line (test line). Excessive immunocomplexes and/or unreacted colloidal gold particles migrate further and are bound in a second line by anti haemocyanine, forming the control line. 2 visible lines will appear in the presence of HBsAg (HBsAg > 1U/ml) in the sample. If no HBsAg is present in the sample or the concentration of HBsAg is below 1U/ml, only the control line will appear. This second line serves as a control for proper handling and intact reagents. No visible lines in the reaction zone indicate either improper performance or deterioration of the reagents.

Procedure

1. Test and samples should be brought to room temperature prior to use.
2. Remove the appropriate number of test from the container. Take care to touch test only at the upper end with the arrow pointing downwards. Close the container immediately after removal of test.
3. Immerse test with the arrow pointing downwards into a tube with 0.25 to 0.5 ml sample. The sample must not touch the cover foil of test. Do not remove test while the chromatographic process is incomplete.
4. Read the result 20-30 minutes after immersion into the sample at a well lit place.

Interpretation

Samples were taken as positive if two lines appeared (one in control region and one in test region) and taken as negative if only one line in control region was appeared. While only one line in test region was taken as an invalid test.

Detection of HCV by screening method Principle

Genomix HCV One Step test device (Catalog number: GNM 02-07-220) was used for the detection of HCV. The HCV one step test device is a qualitative, membrane based immunoassay for the detection of antibody to HCV in serum or plasma. The HCV one

step test device is a qualitative, membrane based immunoassay for the detection of antibody to HCV in serum or plasma. The membrane is coated with protein A on the test line region of the device. During testing, the serum or plasma specimen reacts with the recombinant HCV antigens coated particles. The mixture migrates upward on the membrane by capillary action to react with protein A on the membrane and generate a colored line. Presence of this colored line indicates a positive result, while its absence indicates a negative result. To serve as a procedural control, a colored line will always appear at the control line region indicating that proper volume of specimen has been added and membrane wicking has occurred.

Procedure

Allow test device, specimen, buffer and controls to equilibrate to room temperature prior to testing.

1. Remove the test device from the foil pouch and use it as soon as possible. Best results will be obtained if the assay is performed within one hour.
2. Place the test device on a clean and level surface. Transfer the specimen by a pipette or a dropper. Transfer 5 micro liter of serum or plasma to the specimen well of the test device, then add 2 full drops of buffer (80 micro liters).
3. Wait for the colored line to appear. The result should be read at 10 minutes. Do not interpret the result after 30 minutes.

Interpretation

Samples were considered as negative if one line appears on immunochromatography strip. While test was taken as invalid if line appears only in test region.

Detection of HIV by screening method

Principle

The assay start with a sample and diluents applied to the respective well. The HIV antigen- colloidal gold conjugate embedded in the sample pad react with the

HIV antibody present in blood, serum or plasma sample forming conjugate/HIV antibody complex. As the mixture is allowed to migrate along the test strip, the conjugate/ HIV antibody complex is captured by a second antibody immobilized on a membrane forming a colored test band in the test region. A negative sample does not produce a test band due to absence of colloidal gold conjugate/HIV antibody complex. The antigens used in the conjugate test are recombinant

proteins that correspond to highly Immuno reactive region of HIV1 and HIV2. A colored control band in the control region appears at the end of test procedure regardless of test result. This control band is the result of colloidal gold conjugate binding to the anti-HIV antibody immobilized on the membrane. The control band indicates that the colloidal gold conjugate is functional.

Procedure

For this card:

1. Dispense 1 drop (10µl) of specimen to the “S” well of the test card using the plastic dropper provided according to the figure.
2. Then add two drops of sample diluents to the “D” well.
3. Interpret the result at 15 minutes.

Interpretation

1. Positive: Both purplish red test band and purplish red control band appear on the membrane. The lower the antibody concentration the weaker the test band.
2. Negative: Only the purplish red control band appears on the membrane. The absence of a test band indicates a negative result.
3. Invalid: There should always be a purplish red control band in the control region regardless of test result. If control band is not seen, the test is considered invalid. Repeat the test using a new test device.

Results

Disease	Status		Total
	Positive	Negative	
HbsAg	21	59	80
HCV	40	40	80
HIV	2	78	80

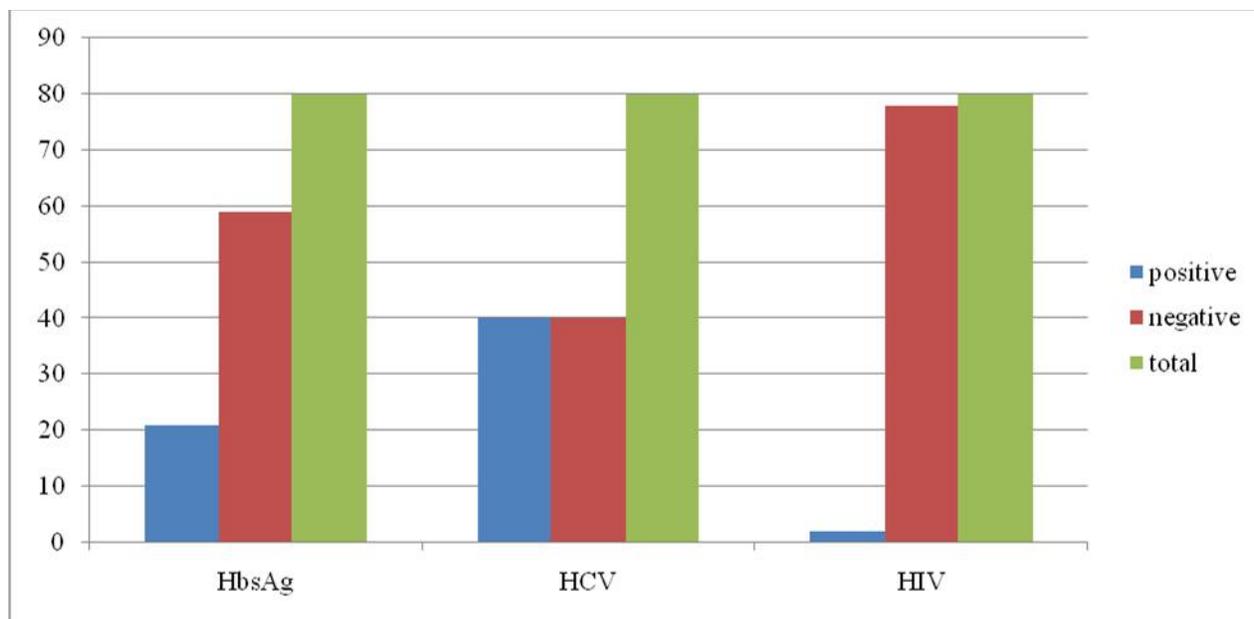
Total persons included in study are 80.

There are 40 HCV positive persons and 40 HCV negative persons.

HbsAg positive persons are 21 and there are 59 HbsAg negative persons.

HIV positive persons are 2 and 78 persons are HIV negative.

Fig 1.



Discussion

This study is based on frequency of viral diseases HCV HbsAg and HIV in target area. HCV infection is becoming a major public health problem, with an estimated global prevalence of 3% occurring in about 180 million carriers and approximately 4 million people have been newly infected annually. HCV is mainly transmitted by blood transfusion. Diagnosis of hepatitis C virus infection is based on documented anti HCV antibodies.

Hepatitis B viruses (HBV) are very serious public health problems. 2 billion individuals infected worldwide and 350 million with chronic HBV infection. Chronic infections with HBV and HCV are associated with serious health risks due to hepatic cirrhosis and hepatocellular carcinoma. Hepatitis B surface antigen and antibody Hepatitis B surface antigen (HBsAg) is the serologic hallmark of HBV infection.

Pakistan enjoyed a low prevalence phase of epidemic from 1987 to 2003. This may have been due to lack of formal surveillance systems, although no study found significant HIV in any group until 2002. In 2003, an

outbreak of HIV among injection drug users in one city heralded the onset of HIV epidemic in the country. Since then different studies and the national HIV surveillance (which started in 2004) have confirmed an escalating epidemic among IDUs and more recently among male and transgender sex workers.

By random selection we included 80 persons in this experimental study from target area that was Nishter town in time limit of one day. People without any discrimination of age and gender were included. Our study is based on the purpose to find the frequency of viral infections as HCV HbsAg and HIV of specific area. We used Immuno chromatographic technique for the screening of HCV HbsAg and HIV.

Results of our study show that, in general population of Nishter town there is high frequency of hepatitis C virus (HCV) as 40 persons out of 80 persons are HCV positive. Frequency of HbsAg is comparatively low as 21 persons were positive for HbsAg. Frequency of HIV is considerably low as only 2 persons were HIV positive among 80 total persons. This study shows a significant trend toward these viral diseases.

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	Subject: Medical Virology
Quick Response Code	

How to cite this article:

Khashia Ambreen, Amna Younas, Sajid Rasool, Ume Hani Ali. (2016). Frequency of HCV, Hbs Ag & HIV in general population Lahore Pakistan. *Int. J. Adv. Res. Biol. Sci.* 3(8): 118-123.