

A Study of Seroprevalence of Hepatitis C in HIV Positive Cases of ICTC at Tertiary Care Centre

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Abstract: The study was conducted to assess the extent of seropositivity of Hepatitis C among HIV positive patients at tertiary care hospital in Rajkot from June 2016 to May 2017 and evaluate the need of routine screening for this infection among such patients. The samples were tested for HIV as per Strategy III of National AIDS control organization by using different system of testing to establish diagnosis of HIV. A total of 300 confirmed HIV-positive samples were tested for anti-HCV antibodies by using one step immunochromatographic assay based on the principle of the double antigen-sandwich technique. Out of total 300 HIV positive patients, 69.67% were male and 30.00% were female. Only one was transgender. Out of 300 samples tested, 5(1.67%) were positive for HCV with 2(0.96%) of male and 3(3.33%) of female patients. Highest prevalence was observed among age group 21–30yrs i.e 2(3.77%), while not a single anti-HCV positive case were recorded in age group ≤ 20 and ≥ 51 which implies that HIV and HCV infection is more common in younger generation. We believe our data could help health professionals to deal better with HIV infected patients. We also believe our data reinforces the need of prevention programs on HIV transmission, which also lead to reduction in prevalence of Hepatitis C.

Keywords: HIV, Hepatitis C, Seroprevalance, India.

INTRODUCTION

Background

Human Immunodeficiency Virus (HIV) causes Acquired Immunodeficiency Syndrome (AIDS). It is a serious disorder of the immune system in which the body's normal defences against infection break down, leaving it vulnerable to a host of life-threatening infections [1].

Almost 35 years have now elapsed. Thirty-five years, in which HIV infection has changed from a fatal condition to a manageable chronic illness. Thirty-five years, in which the development of antiretroviral therapy (ART) has been one of the dramatic advances in the history of medicine. However, for the vast majority of people living with HIV/AIDS, ART is still light years away largely inaccessible in resource-poor countries where HIV continues to devastate families, communities and societies, especially the poor and the socially marginalized [2].

Hepatitis C virus, before it's identification was labelled "non-A, non-B hepatitis," is a linear, single-stranded, positive-sense, 9600-nucleotide RNA virus, the genome of which is similar in organization to that of flaviviruses and pestiviruses; HCV is the only member of genus Hepacivirus in the family Flaviviridae. The HCV genome contains a single large open reading frame (gene) that codes for a membrane and the HCV polyprotein is cleaved during translation and post translationally by host cellular proteases as well as

HCV NS2-3 and NS3-4A proteases. Host cofactors involved in HCV replication include cyclophilin A, which binds to NS5A and yields conformational changes required for viral replication, and liver-specific host microRNA miR-122 [3]. Globally, hepatitis C virus (HCV) has infected more than 170 million people and thus represents a viral pandemic seven times more widespread than infection with the HIV. It is estimated that in India approximately 1.8.2.5% of the population is presently infected by HCV [4] and about 20 million people are already having HCV infection [5]. Prolonged survival of HIV-infected patients coinfecting with HCV may become an important clinical problem. These viruses share similar routes of transmission like through blood and blood products, sharing of needles to inject drugs and sexual route. An estimated 20% of people with chronic HCV infection will progress to cirrhosis over a 20-50 year interval [6]. A greater proportion of HIV/HCV coinfecting people may progress to cirrhosis (serious liver scarring) and liver disease than those with HCV alone [7].

MATERIALS AND METHODS

This study is undertaken to determine seropositivity rate of Hepatitis C virus among Human Immunodeficiency Virus (HIV) reactive cases attending Integrated Counselling and Testing Centre (ICTC), P. D. U. Government Medical College & Hospital, Rajkot. Serums from 300 HIV positive cases were collected from June 2016 to May 2017. These samples were already tested for HIV as per Strategy III [8] of National AIDS control organization by using different system of testing to establish diagnosis of HIV.

Test-1 – (Comb Aids Test)

Test-2–(Meriscreen Immunochromatographic Card Test)

Test-3 – (AIDSCAN Trispot test)

Care has been taken to maintain confidentiality regarding HIV status of an individual and all samples were collected after pretest counselling by counsellor at ICTC centre. Reports were dispatched after post test counselling of an individual by maintaining confidentiality between counsellor and individual tested. No one was allowed to access patient's personal data except Age, Sex & Identification Mark that have to be written on laboratory form. Counsellor at ICTC centre gave all patients unique identification number.

Detection of Anti-HCV (Immunochromatographic Assay).

Principle

HCV Rapid Test (Reckon Diagnostics Seum/Plasma) is a lateral flow chromatographic immunoassay based on the principle of the double antigen-sandwich technique. The membrane is coated with recombinant HCV antigen (core,NS3,NS4,NS5) on the test region of the device. During testing, the serum or plasma specimen reacts with the HCV antigen (core,NS3,NS4,NS5) gold conjugate. The mixture migrates upward on the membrane chromatographically by capillary action to react with recombinant HCV antigen on the membrane and generate a pink-purple line at test region. Presence of this pink-purple line indicates a positive result, while its absence indicates a negative result. To serve as a procedural control, an additional line of goat anti-mouse IgG has been immobilized on the card. If the test is performed correctly, this will result in the formation of pink-purple line upon contact with the conjugate as a control line.

RESULTS

Table-1: HCV Prevalence among HIV positive cases

HCV Positive	HCV Negative	Total	HCV Positive %
05	295	300	01.67%

Table-1 Shows that out of total 300 HIV positive patients, Only 5 patients were HCV positive.

with 3 in age group of 31-40 yrs and 2 in age group of 21-30 yrs.

Table-2 shows that out of total 300 HIV positive patients, Only 5 patients were HCV positive

Table-3 Shows that out of total 300 HIV positive patients, Only 5 patients were HCV positive with 2 male and 3 female.

Table-2: Age wise HCV Prevalence among HIV positive cases

Age (Years)	HCV Positive		HCV Negative		Total (n=300)	
	No.	%	No.	%	No.	%
0 – 10	00	00.00	09	100.00	09	03.00%
11 - 20	00	00.00	15	100.00	15	05.00%
21 - 30	02	03.77	63	96.23	65	21.67%
31 - 40	03	03.19	91	96.81	94	31.33%
41 - 50	00	00.00	66	100.00	66	22.00%
51 - 60	00	00.00	40	100.00	40	13.33%
≥ 61	00	00.00	11	100.00	11	03.67%
Total	05	01.67%	295	98.33%	300	100.00%

Table-3: Sex wise distribution of HCV Prevalence among HIV positive cases

Sex	HCV Positive		HCV Negative		Total (n=300)	
	No.	%	No.	%	No.	%
Male	02	00.96	207	99.04	209	69.67%
Female	03	03.33	87	96.67	90	30.00%
Transgender	00	00.00	01	100.00	01	00.33%
Total	05	01.67%	295	98.33%	300	100%

DISCUSSION

Table-4: Comparison of HCV Prevalence among HIV positive cases in various study

Sr. No.	Study	Total Sample	HCV Positive (%)
1	Present study	300	5 (1.67)
2	Padmapriyadarsini [9]	951	20 (2.10)
3	Antala Sejul [1]	200	06 (3.00)
4	Petrus [10]	490	28 (5.70)
5	Tankhiwale SS [11]	110	8 (7.27)

Co-infection with HIV and HBV is more common than that with HIV and hepatitis C virus (HCV), although more attention has been given to HCV co-infection as a result of its higher frequency of chronic disease.

HCV prevalence among HIV positive cases varies from 1.67% to 7.27% in different studies. Present study shows HCV prevalence rate of 1.67% among HIV infected patients. This is nearly similar to findings of Padmapriyadarsini [9] and Antala Sejul [1]. In some of the studies which shows high prevalence which may be due to study conducted among persons with high-risk behavior like illicit drugs user, which may not be

present in our study group. Indian studies by Tankhiwale SS [11] shows HCV prevalence of 7.27%, which is more than double than present study. The prevalence of hepatitis co-infection with HIV varies widely across different studies, mainly due to the variation in the distribution of risk factors, geographic location etc of the study population and methods of testing.

HIV and HCV share a common mode of transmission (predominantly blood and high risk sexual behaviors) attributes to the significant association between HCV and HIV.

Table-5: Sex wise Comparison of HCV Prevalence among HIV positive cases in others study

SEX	Present study Positive %	Antala Sejul [1] Positive %
Male	0.96%	2.86%
Female	3.33%	3.33%

The rate of co-infection is higher in females (3.33%) compared to males (0.96%) which is similar to

results of Antala Sejul [1], here females being (3.33%) and males (2.86%).

Table-6: Age wise comparison of HCV Prevalence among HIV positive cases in various study

Age Group	Petrus [10]		Antala Sejul [1]		Present study	
	HCV Positive (HIV Positive)	HCV %	HCV Positive (HIV Positive)	HCV %	HCV Positive (HIV Positive)	HCV %
≤ 20	00 (15)	00.00	00 (11)	00.00	00(24)	0
21-30	2 (184)	01.10	03 (85)	03.53	2(65)	3.77
31-40	14 (188)	07.40	02 (71)	02.82	3(94)	3.19
41-50	12 (78)	15.40	01 (26)	03.85	0(66)	0
≥ 51	00 (25)	00.00	00 (07)	00.00	0(51)	0
Total	28 (490)	5.70	06 (200)	3	5(300)	1.67

Age wise distribution showed that the higher HCV prevalence was found in age group 21-30 (3.77%) but the study by Antala Sejul [1] and Petrus [10] found highest prevalence in age group of 41-50 with 3.85% and 15.40% respectively. No positive case was recorded among age group of ≤ 20 and ≥ 51 in present study as well as other studies. The most likely explanation for this observation is the low number of subjects in that age groups compare to other age groups.

CONCLUSION

Out of 300 samples tested, 5(1.67%) were positive for HCV with 2(0.96%) of male and 3(3.33%) of female patients. Highest prevalence was observed

among age group 21-30yrs i.e 2(3.77%), while not a single anti-HCV positive case were recorded in age group ≤ 20 and ≥ 51 which implies that HIV and HCV infection is more common in younger generation.

We believe our data could help health professionals to deal better with HIV/HCV co- infected patients. We also believe our data reinforces the need of prevention programs on HIV transmission, which also lead to reduction in prevalence of HCV.

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