



A STUDY ON HEPATITIS C VIRAL CO-INFECTION IN PEOPLE LIVING WITH HUMAN IMMUNODEFICIENCY VIRUS

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ABSTRACT

One of the leading causes of liver related morbidities in PLHA (People living with HIV and AIDS) is HCV (Hepatitis C virus) co-infection. This study was undertaken to screen PLHA attending Government general hospital, Mahabubnagar, Telangana. 150 participants were included in the study. Detailed demographic profile and history of patients was noted. HIV (Human immunodeficiency virus) status was confirmed with the 3 principles according to NACO guidelines. Out of 150 participants, 50 were healthy controls and 100 were HIV reactive. HIV reactive serum samples were collected and subjected to Hepatitis C virus (HCV) antibody test. CD4 count was also correlated. Frequent screening for HCV in PLHA is essential to initiate early treatment and prevent advancement of liver disease.

KEYWORDS : PLHA, Hepatitis C, HIV, co-infection

INTRODUCTION

Human immunodeficiency virus (HIV), and hepatitis C virus (HCV) co-infection has emerged as a leading cause of morbidity due to liver disease throughout the world in the last two decades^{1,2}. HIV and HCV share common routes of transmission. People with HIV are at increased risk of developing chronic viral hepatitis and liver disease³. Co-infection with HIV accelerates the progression of hepatic fibrosis and results in a more aggressive course of liver disease^{4,5,6,7}.

Liver-related morbidity and mortality is a prominent non-AIDS-related complication (80-90%) in HIV patients with HCV co-infection^{8,9}. Further, individuals with HCV-HIV co-infection have decreased access to liver transplantation compared with persons who have HCV mono-infection¹⁰. This study was conducted to screen HIV patients for HCV co-infection.

MATERIALS AND METHODS:

This study was conducted at Government General Hospital, Mahabubnagar, Telangana, India from November 2019 to January 2020. A total of 150 participants were taken up for study, 100 were HIV reactive and 50 people were healthy controls. Informed consent was taken from all participants. Detailed history and demographic data was collected from the patients.

Inclusion criteria:

- No history of fever over past 3 months

Exclusion criteria:

- Patients with history of fever (since past 3 months), jaundice and deranged liver function test
- Patients not giving consent.

Sample collection:

Adequate amount of blood sample was collected from the patient under strict aseptic conditions according to standard sample collection protocol. Serum was separated and subjected to immediate testing. If any delay, the serum was stored at 2-8°C.

Sample processing:

HIV testing was done according to NACO guidelines.

- 1st test - HIV comb Aids test.
- 2nd test - Merlin HIV I & II triline test
- 3rd test - HIV tridot test.

If all three tests were positive then patient was considered HIV

reactive. HIV reactive and healthy controls were tested for anti-HCV antibodies (Merilisa HCV). Then CD4 count was done by flow cytometry and the values were correlated.

RESULTS AND DISCUSSION

Among 100 HIV reactive patients, 57 were female and 43 were male. In this study, age of the participants ranged from 15-60 years, and the most affected age group was 31-40 years (see chart 1). All were HIV I reactive while HIV and HCV co-infection was seen in 4 patients. 16% of total HIV reactive patients had CD4 < 200 cells/μl, 50% had CD4 count of 200-500 cells/μl and 34% had CD4 > 500 cells/μl (see chart 2). In HIV-HCV co-infected patients, 1 had CD4 < 200 cells/μl, 2 had CD4 count of 201-500 cells/μl and 1 had CD4 > 500 cells/μl. In all the healthy controls, no HCV infection was seen.

Chart 1

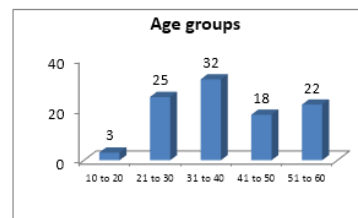


Chart 2

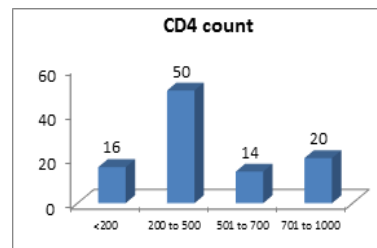


Table 1

Categories	Males	Females
Age (Mean)	39.1 yrs	37.5 yrs
CD4 counts	413.16	526.9
HCV%	1 (1%)	3(3%)

Co-infection with HIV-1 causes increased HCV viral loads, as well as enhanced morbidity in co-infected individuals^{11,12}. In the study conducted by Dr. N. Padma Priya et al¹³, HCV co-infection percentage was 4.1% which is in line with the present study. Whereas, C.Siva Kalyani et al¹⁴ reported 2% and Manisha Jain et al¹⁵ reported 6.3% as HCV co-infection rate in

their studies. Post investigative analysis of this study has revealed that co-infection rates of HCV are higher among HIV positive patients than people who are HIV negative. So, there is need for constant surveillance of HCV co-infection in PLHA that pose a challenge in vaccine design and treatment options.

REFERENCES:

1. Chandra N, Joshi N, Raju YS, Kumar A, Teja VD. Hepatitis B and/or C co-infection in HIV infected patients: A study in a tertiary care centre from south India. *The Indian journal of medical research*, 2013; 138(6):950.
2. Ahsan SM, Mehta PR. HIV, HBV and HCV co-infection study. *Bombay Hospital J*, 2002; 3:5-7.
3. Miriam J. Alter. Epidemiology of viral hepatitis and HIV co-infection. *Journal of hepatology*, 2006; 44: Supplement 1, Pages S6-S9DOI: <https://doi.org/10.1016/j.jhep.2005.11.004>.
4. H. Nina Kim, David H. Spach. Treatment of HCV in Persons with HIV Coinfection. <https://www.hepatitis.cw.edu/go/key-populations-situations/treatment-hiv-coinfection/core-concept/all26/06/202,3.10pm>
5. Kirk GD, Mehta SH, Astemborski J, et al. HIV, age, and the severity of hepatitis C virus-related liver disease: a cohort study. *Ann Intern Med*, 2013; 158:658-66.
6. Di Martino V, Rufat P, Boyer N, et al. The influence of human immunodeficiency virus coinfection on chronic hepatitis C in injection drug users: a long-term retrospective cohort study. *Hepatology*, 2001; 34:1193-9.
7. Lo Re V 3rd, Kallan MJ, Tate JP et al. Hepatic decompensation in antiretroviral-treated patients coinfecting with HIV and hepatitis C virus compared with hepatitis C virus-monoinfected patients: a cohort study. *Ann Intern Med*, 2014; 160:369-79.
8. Joshi D, O'Grady J, Dieterich D, Gazzard B, Agarwal K. Increasing burden of liver disease in patients with HIV infection. *Lancet*, 2011; 377:1198-209.
9. Rosenthal E, Roussillon C, Salmon-Céron D, et al. Liver-related deaths in HIV-infected patients between 1995 and 2010 in France: the Mortavic 2010 study in collaboration with the Agence Nationale de Recherches sur le SIDA (ANRS) EN 20 Mortalité 2010 survey. *HIV Med*, 2015; 16:230-9.
10. Thomas DL. The challenge of hepatitis C in the HIV-infected person. *Annu Rev Med*, 2008; 59:473-85.
11. Maria Carla Liberto, Emilia Zicca, Grazia Pavia, Angela Quirino. Virological Mechanisms in the Coinfection between HIV and HCV. *Hindawi Publishing Corporation Mediators of Inflammation Volume 2015, Article ID 320532, 7 pages* <http://dx.doi.org/10.1155/2015/320532>.
12. M. Bonacini, S. Louie, N. Bzowej, and A. R. Wohl. "Survival in patients with HIV infection and viral hepatitis B or C: a cohort study". *AIDS*, 2004; 18(15):2039-2045.
13. Dr. N. Padma Priya, Dr. S. Pavani, Dr. Haseeba Tanveer, Dr. S. Jaya Prakash Rao, Dr. G. Sasikala. Incidence of Twin Hepatitis Infections in People Living with HIV (PLWH) at a Tertiary Care Hospital. *Sch J App Med Sci* 2016; 4(11A):3893-3895.
14. C. Siva Kalyani, N. Lakshmi, Koripella Rama Lakshmi, V. Ashok Kumar, Sulakshana Sony Cheemala. Seroprevalence of hepatitis B virus and hepatitis C virus coinfection in human immunodeficiency virus infected patients at a tertiary care hospital in South India. *International Journal of Research in Medical Sciences*, 2015; 3(8):2041-5.
15. Manisha Jain, Anita Chakravarti, Vikas Verma, Preena Bhalla. Seroprevalence of hepatitis viruses in patients infected with the human immunodeficiency virus. *Indian Journal of Pathology and Microbiology*, 2009; 52(1):17-19.