

## Prevalence of Hepatitis B, Hepatitis C and HIV in Patients Presenting with Myocardial Infarction to Emergency Department

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### Abstract

**Objectives:** To calculate the prevalence of Hepatitis B, Hepatitis C and HIV infections in patients of myocardial infarction presenting in the emergency department.

**Methods:** This is a longitudinal observational study.

**Results:** HIV, HCV and HBsAG were positive in 7 (7.0%), 4 (4.0%) and 3 (3.0%) patients respectively. Whereas both HIV and HBsAG were positive in 5 (5.0%), both HIV and HCV were positive in 1 (1.0%) patients. HCV and HBsAg co-infection was positive in none.

**Conclusion:** A high prevalence of Hepatitis B, Hepatitis C and HIV infections in patients is noted amongst patients of myocardial infarction reporting to emergency medicine department. This high number may be due to an inadequate sample size or an error in a study design or a consequence of reported more prevalence in an emergency scenario.

**Keywords:** Hepatitis B; Hepatitis C; HIV; Myocardial Infarction.

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## INTRODUCTION

Hepatitis B and C are two serious viral infections that can cause liver damage. HIV is a virus that attacks the immune system, making people more susceptible to other infections, including hepatitis B and C. These three infections are often undiagnosed, as many people who are infected do not experience any symptoms. However, if left untreated, they can lead to serious health problems, including liver cancer, liver failure, and death.

Studies have shown that the prevalence of HIV, hepatitis B, and hepatitis C is higher among

patients reporting to emergency departments than in the general population. For example, a study in India found that the prevalence of HIV, hepatitis B, and hepatitis C was 0.21%, 0.45%, and 0.28%, respectively, among patients who presented to the emergency department.<sup>2</sup>

There are a number of reasons why the prevalence of these infections is higher in emergency departments. First, people who are infected with HIV, hepatitis B, or hepatitis C are more likely to experience medical problems that require emergency care. Second, people who are infected with these infections may not be aware of their status, and they may only seek medical attention when they are experiencing a serious health problem. Third, emergency departments are often a convenient place for people to get tested for these infections.<sup>1,2</sup>

## METHODS

**Study Design:** This study was a longitudinal observational study.

**Study Population:** Patients presenting to the emergency medicine department with complaints of chest pain and finally diagnosed as Myocardial infarction were included in this study.

**Data Collection:** Collection of data for 100 patients was done in following manner: Patient's identification information like name, age, sex, address, etc was noted. Chief Complaints of patients were noted. A detailed history was taken which included date, time and duration of chest pain, date and time of arrival to hospital, mode of transportation of patient, what treatment the patient received before reporting to hospital?, other complaints & past illness, significant past history of medical illnesses were noted, any

other regular medicine use, personal history and family history were also taken. A generalised and systemic detailed examination was performed before making the provisional and final diagnosis of Myocardial Infarction. Upon admission viral makers were done. ELIZA testing was done for all patients admitted.

**Statistical Analysis:** Collected data was coded and entered in Microsoft Excel sheet. Statistical analysis was carried out using software SPSS-statistical package for social sciences version 20.0. Quantitative variables were expressed by using mean, median and standard deviation. Qualitative variables were expressed by using frequency and percentage (%). Compilation of data and its statistical analysis was performed.

## RESULTS

HIV, HCV and HBsAg were positive in 7(7.0%), 4(4.0%) and 3(3.0%) patients respectively. Whereas both HIV and HBsAg were positive in 5(5.0%), both HIV and HCV were positive in 1 (1.0%) patients. HCV and HBsAg co-infection was positive in none. All three were positive in none. It is shown in Table 1 and Fig. 1.

Table 1: Viral Profile of the Patients

Viral Profile	Number of Patients (n=100)	Percent (%)
HIV	7	7.00%
HBsAg	3	3.00%
HIV+ HBsAg	5	5.00%
HCV	4	4.00%
HCV + HIV	1	1.00%
HBsAg + HCV	0	0%
HIV + HCV + HBsAg	0	0%

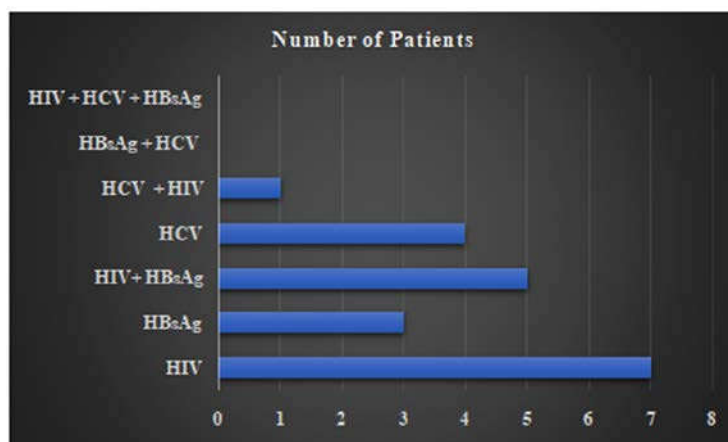


Fig. 1: Viral Profile of the patients

## DISCUSSION

The prevalence of HIV, Hepatitis B and Hepatitis C among patients reporting to the emergency department remains a significant concern, highlighting the importance of early detection, timely treatment, and prevention efforts. By implementing comprehensive strategies that involve training healthcare providers, improving screening processes, and strengthening community collaborations, we can strive to decrease their prevalence in emergency care settings. Additionally, increasing awareness and promoting education can empower individuals to make informed choices regarding their sexual health and reduce the transmission of HIV within the population. Several factors contribute to the elevated prevalence of HIV among patients visiting the emergency department. Firstly, individuals who engage in risky behaviors, such as unprotected sexual intercourse or intravenous drug use, are more likely to seek urgent medical care due to complications associated with these activities. Secondly, the ED often serves as a safety net for underserved populations, including those who lack access to regular healthcare. These individuals may present with advanced stages of HIV infection or associated complications, as delayed diagnosis and management are more common in such populations. A possibility of accelerated atherosclerosis amongst HIV, Hepatitis B and Hepatitis C patients must be kept in mind. a systematic review and meta-analysis published in 2018 found that the pooled prevalence of HIV/HBV co-infection in India was 1.89% [95% confidence intervals (CI) = 1.2%-2.4%]. This means that approximately 1.9% of people living with HIV in India are also infected with hepatitis B.

HIV/HBV co-infection is a serious condition that can increase the risk of liver cancer and other complications. A meta-analysis was done to estimate the prevalence of HBV/HCV co-infection in 2017. Most of the studies analysed included patients from hemodialysis, known chronic renal failure, persons who inject drugs, blood donors, pregnant women, chronic liver disease, renal transplant recipients, and routine diagnostics.<sup>3-14</sup> Only one study has been noted to have the prevalence of HIV in patients with chest pain ie 3.5%.<sup>15</sup> In co-infection, the presence of one virus impacts the natural history of the other virus. HIV accelerates the natural course of HBV and HCV infection and facilitates faster progression of liver disease to cirrhosis and hepatocellular carcinoma. Disease progression to cirrhosis in HIV positive patients is almost three times faster as

compared to HIV negative patients.<sup>16-17</sup>

## CONCLUSION

A high prevalence of Hepatitis B, Hepatitis C and HIV infections in patients is noted amongst patients of myocardial infarction reporting to emergency medicine department. This high number maybe due to an inadequate sample size or an error in a study design or a consequence of reported more prevalence in an emergency scenario.

## DECLARATION

**Conflict of interest:** We declare that we do not have any conflict of interest.

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