



ASSOCIATION OF TYPHOID FEVER WITH HEPATITIS A AND HEPATITIS E VIRAL INFECTIONS: A SOUTH INDIAN PERSPECTIVE

Microbiology

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ABSTRACT

Introduction: Endemic, enteric infectious agents continue to wreak havoc on the health of communities in our country. The present study was undertaken with the aim of elucidating the association of typhoid fever with Hepatitis A (HAV) and Hepatitis E (HEV) viral infections as there is a paucity of data regarding the prevalence of concurrent infections with these pathogens from our region.

Materials and Methods: Of the serum specimens received during February – March 2018, 100 samples were routinely tested by Widal tube agglutination method. The same specimens were analysed for the presence of HAV and HEV IgM antibodies by ELISA.

Results: The prevalence of typhoid, HAV and HEV in the study population was 3 %, 1% and 3% respectively while co-infection with typhoid and HEV was found in 1% of cases.

Conclusions: There is a need to conduct similar studies but on a larger scale to correctly estimate the burden of co-infections with common enteric pathogens.

KEYWORDS

Typhoid, Hepatitis A, Hepatitis E, Co-infections

INTRODUCTION

Infectious diseases are leading causes of morbidity and mortality world-wide. Several enteric infectious agents are endemic in tropical, developing countries like India where they continue to wreak havoc on the health of communities. Socio-economically backward sections of the population, already struggling against odds like poverty and malnutrition, are often worst hit. Lack of basic infrastructure like provision of safe drinking water and efficient sewerage systems contribute significantly to the burden of feco-orally transmitted infections. Many of these diseases share a common symptomatology in the form of fever, vomiting, diarrhea and jaundice thus presenting a clinically challenging situation especially in cases of concurrent infections¹.

Enteric or typhoid fever is common in India in epidemic as well as sporadic forms². Hepatitis and jaundice in these cases have been frequently reported. Its incidence varies from 0.5 to 7.6%. Presence of Jaundice in typhoid fever may confuse the clinician as it is more commonly associated with malaria and viral hepatitis. Fulminant hepatic failure in typhoid fever is usually due to co infection with hepatitis A virus^{3,4,5}.

Hepatitis A viral infection continues to be one of the most frequently reported vaccine-preventable diseases in the world, despite the licensure of hepatitis A vaccine in 1995⁶. Limited economic resources have an impact on national immunization program and diseases like hepatitis A are not covered by it⁷. Hepatitis E Virus or HEV is regarded as the major etiological agent of enterically transmitted non-A hepatitis in India. It has never been associated with chronic infection; however a high case-fatality rate has been found among pregnant women⁸. Co-infection of Hepatitis B with C or D has been well documented in literature but acute HAV with HEV has rarely been reported in the past⁹. Although acute hepatitis E is not so prevalent in children as compared to HAV, both infections have the same mode of transmission and existence of such co-infections can be anticipated in the setting of poor sanitary conditions^{9,10}.

The present study was undertaken with the aim of elucidating the association of typhoid fever with Hepatitis A (HAV) and Hepatitis E (HEV) viral infections among patients presenting to a tertiary healthcare facility in Hyderabad, Telangana, as there is a paucity of data regarding the prevalence of concurrent infections with these pathogens from our region.

MATERIALS AND METHODS

Of the serum specimens received during the study period February – March 2018 in Serology section of the Clinical Microbiology Laboratory of Gandhi Hospital, attached to Gandhi Medical College, Hyderabad, Telangana, 100 samples were routinely tested by Widal tube agglutination method (Arkray, healthcare pvt. Ltd., Surat, India). The same specimens were analysed for the presence of HAV and HEV by IgM capture ELISA (Dia.Pro Diagnostic Bioprobes, Italy). All the tests were performed as per manufacturer's instructions and the results were tabulated. Demographic characteristics of the study population, namely age and gender, were documented and the location of the patients at the time of sample submission was noted.

RESULTS

The prevalence of typhoid, HAV and HEV in the study population was found to be 3 %, 1% and 3% respectively while co-infection with typhoid and HEV was demonstrated in 1% of cases. The study population comprised 54 % females and 46 % males, with a wide-ranging age distribution of 1 year to 65 yrs. Majority of the patients i.e., 54 % were referred from the out-patient departments (OPD).

DISCUSSION

Infectious diseases including tropical, endemic, enteric infections continue to extract a heavy toll in terms of quality of life and case fatalities in developing countries like ours. The problem of concurrent infections with multiple enteric pathogens is increasingly being recognized and reported in literature. However, to the best of our knowledge, the publications related particularly to HAV, HEV and typhoid co-infections are mostly in the form of isolated case reports^{11,12,13,14} and there are no population based studies related to the co-prevalence of these pathogens. Our present study is a small effort, but hopefully a significant one, aimed at drawing attention to the lacunae regarding the sero-epidemiological data on these common and important infections. In addition to small sample size, our study was also limited by non-documentation of clinical features and other relevant lab investigations. The possibility of co-infection should definitely be considered particularly in cases with atypical and / or severe clinical presentation. There is a need to conduct similar studies but on a larger scale to correctly estimate the burden of co-infections with common enteric pathogens in the community.

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