Section: Medical Gastroenterology

Original Research Article

ADHERENCE TO HEPATITIS IMMUNIZATION GUIDELINES FOR PATIENTS WITH CHRONIC LIVER DISEASE

Lal Krishna U[1], Saji Sebastian[2], Deni Joseph[3], Ramu M[3], Sandesh K[4], Nithya V[5], Gaurav Khatana[5], Gino Rony Philip[5]

[1]Senior Resident, Department of Medical Gastroenterology, Government Medical college Kottayam, Kerala, India.
[2]Associate Professor, Department of Medical Gastroenterology, Government Medical college Kottayam, Kerala, India.
[3]Assistant Professor, Department of Medical Gastroenterology, Government Medical college Kottayam, Kerala, India.
[4]Professor, Department of Medical Gastroenterology, Government Medical college Kottayam, Kerala, India.
[5]Senior Resident, Department of Medical Gastroenterology, Government Medical college Kottayam, Kerala, India.

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Corresponding Author:
Dr. Ramu M,
Email:
ramumuraleedharanpillai@gmail.com

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Abstract

Background: This prospective observational study aimed to assess adherence to hepatitis A and B vaccination guidelines among physicians treating patients with chronic liver disease (CLD) in both primary and tertiary healthcare settings. **Materials and Methods:** The study, conducted over 12 months at Government Medical College in Kottayam, India, enrolled 126 patients diagnosed with non-Hepatitis B etiology CLD. Data collection included demographics, clinical details, serological testing results, and vaccination recommendations from medical records and patient questionnaires. Statistical analysis was performed using SPSS version 24. **Result:** The study found low adherence to vaccination recommendations and testing rates across both primary and tertiary care levels. Significant proportions of patients were not tested for hepatitis A antibodies (81.7%) or HBsAg (51.6%) at the primary care level. Vaccination recommendations showed concerning gaps, with a notable variation between primary and tertiary care providers. Completion rates for hepatitis A and B vaccinations were also low, highlighting potential risks for preventable infections. **Conclusion:** The study underscores the need for improved education, awareness, and implementation of vaccination protocols for patients with CLD. Standardized guidelines and continuous medical education may help align physician's practices with best practices, ultimately improving patient care and outcomes. Further research is warranted to address the observed gaps and enhance vaccination adherence in this vulnerable patient population.

INTRODUCTION

Adherence to immunization guidelines for hepatitis A ,B for chronic liver disease patients is associated with improved long term outcomes .We aimed to study the degree of adherence for hepatitis A,B immunization guidelines among physicians at primary health care and tertiary health care level for patients with chronic liver disease patients Patients with chronic liver diseases, particularly those who develop acute hepatitis A and chronic hepatitis B, exhibit more severe clinical outcomes and a higher mortality risk compared to healthy individuals with hepatitis A. This discrepancy is most notable in older patients and those showing histological signs of chronic hepatitis or cirrhosis, rather than in asymptomatic hepatitis B carriers. Additionally, individuals with acute hepatitis A super-infection and chronic hepatitis B face an elevated likelihood of fulminant hepatitis and death. Therefore, it's crucial to recognize that patients with various chronic liver conditions are at an increased risk of intensified disease severity when superimposed with hepatitis.Management-wise, timely administration of safe and effective hepatitis A and B vaccines should be integrated into the routine care of patients with chronic liver disease, ideally early in the disease's progression.

Cirrhosis-related immune dysfunction is characterized by changes in both innate (such as decreased complement activity, reduced chemotaxis, and phagocytosis) and adaptive immunity (including

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decreased memory cells, CD4 helper cells, and T cell exhaustion).[1,2] These alterations lead to an insufficient immune reaction against a broad spectrum of pathogens. This compromised adaptive immunity might also elucidate the reduced responsiveness to vaccines within this patient group. Consequently, individuals with Chronic Liver Disease (CLD), especially those with cirrhosis, are exposed to the risk of hepatic decompensation upon contracting preventable viral infections like hepatitis A and B, pneumococcal illness, influenza, and coronavirus disease-19 (COVID-19).

Furthermore, the co-infection of hepatitis B virus (HBV) in CLD heightens the susceptibility to hepato cellular cancer (HCC). To address these concerns, the Centers for Disease Control and Prevention (CDC), Advisory Committee on Immunization Practices (ACIP), and the American Association for the Study of Liver Diseases (AASLD) advocate early vaccination against hepatitis A virus (HAV), HBV, influenza, pneumococcus, and herpes zoster in individuals with CLD to elicit the best immune response. It's advisable to prioritize inactivated vaccines over live attenuated ones, particularly in cases of immunocompromised individuals like transplant recipients, for whom live vaccines are not recommended. Despite these robust guidelines, the rate of vaccination in this susceptible demographic remains below optimal levels.

MATERIALS AND METHODS

This prospective observational study, conducted over a 12-month period (start date after IRB approval), took place within the medical gastroenterology outpatient and inpatient departments of Government Medical College in Kottayam, India. The study's objective was to assess the adherence of primary and tertiary care physicians to recommended vaccination guidelines for Hepatitis A and B in patients diagnosed with non-Hepatitis B chronic liver disease (CLD).

The study population included 126 patients aged 18 years and older who had received a diagnosis of CLD (excluding Hepatitis B) prior to being listed for a liver transplant or expressing unwillingness for the procedure. Patients with a positive Hepatitis B surface antigen (HBsAg) test or those undergoing pre-transplant workup were excluded from the study.

Data collection employed two main methods: a semi-structured questionnaire and a review of medical records. The questionnaire captured detailed information on patients' demographics, including age, gender, and underlying diagnosis. Additionally, it explored clinical particulars such as the etiology of the CLD, Child-Turcotte-Pugh (CTP) score to assess liver function, and the source of referral to the Government Medical College's Hepatology Clinic. Further details collected through the questionnaire included past episodes of jaundice, number of clinic visits, and any prior admissions to tertiary care centers. Serological testing results for Hepatitis A antibodies and HBsAg status, obtained from both primary and tertiary care settings, were documented. Finally, the questionnaire systematically recorded the vaccination recommendations provided by physicians for both Hepatitis A and B vaccines.

Statistical analysis was performed using SPSS version 24. Quantitative variables were expressed as mean and standard deviation, while qualitative variables were presented as frequencies and percentages. Chi-square tests were used to assess associations between categorical variables, and independent samples t-tests were employed to compare continuous variables between groups. A p-value of less than 0.05 was considered statistically significant.

RESULTS

The study enrolled 126 participants with a mean age of 52.5 years (range: 29-75 years). The majority were males (73%) and the leading cause of chronic liver disease was alcohol (47.6%). Most patients presented with Child-Pugh class B (56.3%) and were referred by internal medicine physicians (46.8%) [Figure 1].

Serological testing revealed that a significant proportion of patients had not been tested for hepatitis A antibody (81.7%) or HBsAg (51.6%) at the primary care level. [Table 1,2]

Vaccination recommendations also showed concerning gaps. At the primary care level, 35.7% of patients received no recommendation for hepatitis B vaccination, and 52.4% received no recommendation for hepatitis A vaccination. Similar trends were observed at the tertiary level, with 23.8% and 26.2% of patients not receiving recommendations for hepatitis B and A vaccination, respectively.

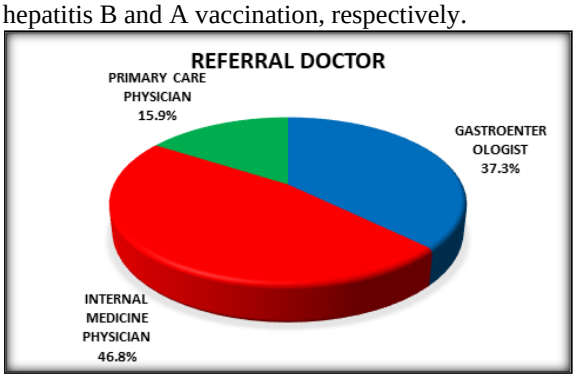

Figure 1: Referral source

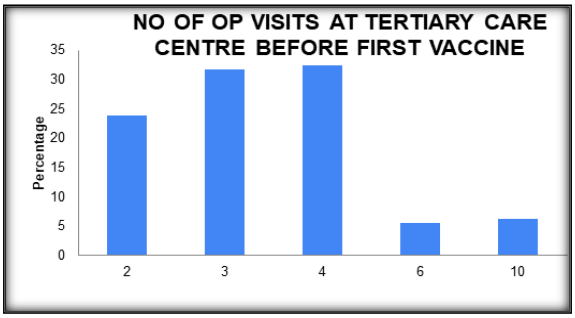

Figure 2: Number of outpatient visits at Tertiary care centre before first vaccine

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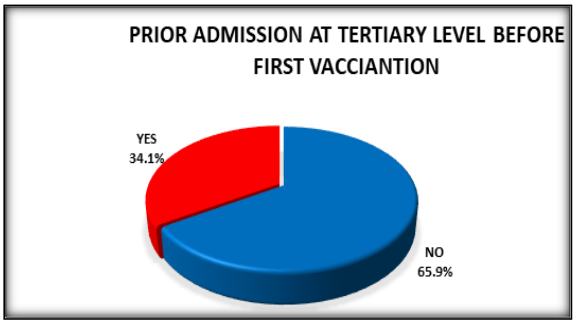

Figure 3: Prior admission at tertiary care centre before first vaccination

There was a significant variation in vaccination recommendations between primary and tertiary care providers. The chi-square test revealed a p-value of less than 0.001 for both hepatitis A and B recommendations, indicating a highly statistically significant difference in practices between the two levels of care. [Table 3 and Table 4]

Furthermore, vaccination completion rates were low. Only 6.3% of patients had completed the hepatitis A vaccination schedule, and 21.4% had completed the hepatitis B vaccination schedule in tertiary center

In terms of clinical history, a majority of patients (57.1%) reported a history of jaundice. The distribution of outpatient visits at the tertiary care level showed the highest frequency (31.7%) for patients with 3 visits prior to vaccination [Figure 2]. Additionally, 34.1% of patients had been previously admitted to a tertiary care center prior to initial vaccine [Figure 3].

Table 1: hepatitis a anti body checked at primary health care level

Hepatitis a anti body checked at primary health care level	Frequency	Percent
No	103	81.7
Yes	23	18.3
Total	126	100

Table 2: HBS Ag checked at primary health care level

HBS Ag checked at primary health care level	Frequency	Percent
NO	65	51.6
YES	61	48.4
Total	126	100

Table 3: Vaccination recommendation for Hep B at primary health care level and tertiary health care level

HEP B vaccination recommendation		Tertiary health care level			Total
		No	Not determined*	Yes	
Primary health care level	NO	13	0	26	39
	NOT DETERMINED*	9	36	0	45
	YES	8	0	28	36
Total		30	36	54	120

P Value -<0.001.*-subjects included not tested for Hepatitis B serology

Table 4: Vaccination recommendation for Hep A at primary health care level and tertiary health care level

Hep A vaccination recommendation		Tertiary health care level			Total
		No	Not determined*	Yes	
Primary health care level	No	33	8	25	66
	Not determined*	0	45	0	45
	Yes	0	0	15	15
Total		33	53	40	126

P Value -<0.001.*-subjects included not tested for IgG HAV

DISCUSSION

The presented study delves into the adherence of physicians to hepatitis A and B vaccination guidelines for patients with chronic liver disease (CLD) at both primary healthcare and tertiary healthcare levels. The study's findings reveal several crucial insights and raise important points for discussion.

1. Adherence to Vaccination Guidelines: The study highlights a concerning gap in adherence to recommended vaccination protocols for patients with chronic liver disease. Both hepatitis A and B vaccinations are critical in preventing severe outcomes in this vulnerable patient population. The data clearly show that a significant proportion of patients were not vaccinated at both primary and tertiary healthcare levels.

2. Testing and Awareness: The study also points out deficiencies in testing practices and awareness. A substantial number of patients had not been tested for hepatitis A antibodies and HBSAg, which are important steps in determining vaccination needs. This lack of testing underscores the need for increased awareness among physicians about the importance of these tests in guiding vaccination decisions.

3. Variation in Recommendations: The study reveals that there is notable variation in vaccination recommendations for hepatitis A and B between primary healthcare and tertiary healthcare levels. This inconsistency could be due to differences in physician knowledge, guidelines familiarity, or

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clinical priorities. It emphasizes the need for standardized guidelines and continuous medical education to ensure that all physicians are aligned with the best practices.

4. Vaccination Status and Completion: The data illustrate low rates of completed vaccination schedules for both hepatitis A and B. This is a cause for concern, as incomplete vaccination can leave patients at risk of preventable infections. The study does not delve into the reasons behind incomplete vaccinations, which would have provided valuable insights into barriers and challenges faced by patients and healthcare providers.

5. Implications for Clinical Management: The study's findings have significant implications for clinical management. Patients with chronic liver disease are more susceptible to severe outcomes from infections like hepatitis A and B. Ensuring proper vaccination is an essential part of managing their health and reducing the risk of complications. The study underscores the importance of integrating vaccination protocols into routine care practices.

6. Importance of Education and Awareness: One of the study's main takeaways is the need for enhanced education and awareness among healthcare providers. It's evident that there is room for improvement in terms of knowledge about vaccination guidelines and the importance of testing. Medical institutions should prioritize continuous medical education to ensure that physicians are up-to-date with the latest recommendations.

7. Future Directions: While the study provides valuable insights, it has limitations. The reasons behind non-adherence to vaccination guidelines, patient-specific factors, and potential strategies to improve adherence are not explored. Future research could delve into these aspects, providing a more comprehensive understanding of the barriers and potential solutions.

8. Policy and Practice Implications: The study's findings have implications for healthcare policy and practice. Medical societies and institutions should collaborate to develop clear and comprehensive guidelines for vaccination in patients with chronic liver disease. Additionally, healthcare systems could implement strategies to track and ensure proper vaccination, such as electronic health record reminders or vaccination clinics within medical centers.

9. Multifaceted Approach: Addressing the observed gaps in vaccination adherence requires a multifaceted approach. This includes physician education, patient education, improving access to testing and vaccination, and implementing reminders in clinical workflows. By addressing these factors, healthcare systems can work toward improving vaccination rates and subsequently reducing the burden of preventable infections in patients with chronic liver disease.

10. Collaboration and Advocacy : The study's findings underscore the importance of collaboration between medical organizations, governmental health agencies, and patient advocacy groups. By working together, these entities can raise awareness, develop targeted educational initiatives, and advocate for policies that promote proper vaccination practices in patients with chronic liver disease.

Hepatitis A Vaccine and CLD: Superinfection with Hepatitis A Virus (HAV) can lead to increased mortality in individuals with Chronic Liver Disease (CLD).[2-6] Studies have shown mortality rates of 28% and 35% in cases of acute HAV in CLD, with fulminant hepatic failure being a common outcome. Interestingly, superinfection in individuals with underlying chronic Hepatitis B Virus (HBV) tends to have a less severe course. Fatal outcomes have also been reported in cases of HAV superinfection in those with alcoholic cirrhosis.[7,8]

Immunogenicity of Hepatitis A Vaccine in CLD: Hepatitis A vaccines such as Havrix and Vaqta have been approved for use. While some countries like the United Kingdom and the United States recommend HAV vaccination for individuals with CLD, routine vaccination is not recommended in countries like India where the prevalence of HAV antibodies in CLD patients is high.[9] The safety and efficacy of HAV vaccines in CLD are well established.[10,11] Studies have demonstrated high seroconversion rates following vaccination, with rates ranging from 94% to 98% in patients with chronic HBV or HCV. However, vaccine efficacy is reduced in individuals with advanced liver disease, particularly those with Child-Pugh class B and C cirrhosis.[12] Therefore, early vaccination in the disease course is crucial to achieve optimal vaccine efficacy. Recent analyses from the Veterans Affairs (VA) case registry have shown a significant reduction in the incidence of HAV superinfection in vaccinated individuals compared to non-vaccinated individuals, further supporting the importance of vaccination in CLD patients.[13]

Vaccination Coverage for Hepatitis A and Hepatitis B: Despite recommendations from various expert panels, vaccination coverage against hepatitis A and B remains low among CLD patients, though there is some improvement. Data from the National Health and Nutrition Examination Surveys (NHANES) indicate that vaccination rates against HAV increased from 13% to 20% between 1999–2004 and 2005–2008, and coverage against HBV increased from 23% to 32% during the same period. In 2013–14, nearly 40% of adults with CLD received at least one dose of hepatitis A vaccine, and 51% received one dose of hepatitis B vaccine. Superinfection with HAV can lead to severe outcomes in individuals with CLD. Hepatitis A vaccination is recommended for this population, with evidence supporting its safety and efficacy. Despite improvements, vaccination coverage remains suboptimal, underscoring the need for increased efforts to ensure that CLD patients receive appropriate and timely vaccinations to prevent serious complications associated with viral superinfections.[14]

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Limitations of Study

The study has limitations that warrant further investigation. It is a single-center study with a relatively small sample size, limiting its generalizability to other populations. The study design does not allow for causal inferences about the factors influencing vaccination adherence. Additionally, the study did not explore the reasons behind incomplete vaccinations or patient-specific factors that might influence adherence. Future research with larger and more diverse samples, employing methodologies that allow for examining causal relationships and exploring the underlying reasons for non-adherence, would provide a more comprehensive understanding of the challenges and potential solutions for improving vaccination rates in patients with chronic liver disease.

CONCLUSION

The study highlighted several significant trends and gaps in adherence to vaccination guidelines and testing practices for patients with chronic liver disease. It emphasized the need for improved awareness, education, and implementation of recommended protocols to ensure better care and management for this vulnerable patient population. To fully understand the vaccination adherence of hepatitis A and B for chronic liver disease patients, further analysis would be needed. This could include examining factors influencing adherence, reasons for non-adherence, and potential strategies for improving vaccination rates in this population. It's important to note that this dataset provides insights into the situation but does not include additional contextual details that could further inform the analysis.

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