

Anti Hbs Sero-Prevalence Study In Patients With Ulcerative Colitis At A Super Speciality Hospital From North India

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Abstract :

Background: Patients with Inflammatory Bowel Disease are at high risk for Hepatitis B virus infection due to blood transfusions, invasive surgical procedures and endoscopic procedures. India falls in intermediate endemic zone with high disease burden for Hepatitis B virus infection. Testing for anti HBs levels in Ulcerative Colitis patients may reflect immunity status against Hepatitis B Virus in these patients of this area. These measures will increase Hepatitis B vaccination coverage in adult patients.

Aim : To study sero-prevalence of anti HBs and anti HBc Total among Ulcerative Colitis patients attending Nehru Hospital, PGIMER, Chandigarh.

Methods: Patients undergoing treatment for Ulcerative Colitis at Nehru Hospital, PGIMER were included in the study. 4 ml blood sample of these patients were taken and stored at -20°C and further tested for HBsAg, Anti HCV, anti HBs and anti HBc Total by ELISA.

Result: A total of 228 Ulcerative Colitis patients were included in the study. Out of these 165 Ulcerative Colitis patients (72.36%) were negative for anti HBs and anti HBc Total signifying these patients were not vaccinated for Hepatitis B vaccine earlier. 48 Ulcerative Colitis patients (21.05%) were positive for anti HBs and negative for anti HBc Total indicating earlier Hepatitis B vaccine compliance. 15 Ulcerative Colitis patients (6.57%) were anti HBc Total positive indicating their previous history of HBV exposure.

Conclusion: 72.36% of Ulcerative Colitis patients attending Nehru Hospital, PGIMER were not vaccinated against Hepatitis B virus. Patients attending hospitals should be tested for HBsAg, Anti-HBs, Anti HBc Total as a routine in order to vaccinate them for Hepatitis B Vaccine.

Key words: Ulcerative Colitis, HBV vaccination, HBsAg, Anti-HBs titers, Anti HBc Total

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I. Introduction

Patients with IBD (Inflammatory Bowel Disease) are at high risk for Hepatitis B virus (HBV) infection due to blood transfusions, invasive surgical procedures and endoscopic procedures(1). IBD is characterized by chronic and idiopathic inflammatory bowel disorder being represented by ulcerative colitis (UC) and Crohn's disease (CD). Studies have shown that few IBD patients who need HBV vaccination are actually vaccinated and given adequate immunization. The prevalence of hepatitis B immunity verified by titration of anti-HBs antibodies is low in individuals with IBD, ranging from 12% to 77% of optimal immunization against the virus (2). India falls in an intermediate endemic zone for HBV (prevalence of 2 - 7%, with an average of 4%), with a disease burden of approximately 50 million (3). Anti HBs level in adults reflects the HBV vaccination compliance done during childhood. The result of the study may lead to HBV vaccination in those adult patients who were not vaccinated earlier.

II. Objective

To study sero-prevalence of anti HBs and anti HBc Total among Ulcerative Colitis patients attending Nehru Hospital, PGIMER, Chandigarh.

III. Materials and Methods

Study Design : Prospective study

Study Method : Patients of Ulcerative Colitis attending Nehru Hospital, PGIMER, Chandigarh were included in the study. Past history of HBV vaccination, jaundice etc. were noted. Blood samples (4 ml.) of these patients were taken and stored at -20°C and tested for HBsAg, Anti HCV, Anti HBs and Anti HBc Total by ELISA.

Ethical Considerations: Informed consent were taken from each patient before its inclusion in the present study. There was no additional physical or financial burden on the patients. Ethical clearance was obtained from Institute Ethics Committee.

IV. Results

The present study included 228 Ulcerative Colitis patients under going treatment at Nehru Hospital ,PGIMER, Chandigarh. There were 116 male patients (50.87%) and 112 female patients(49.12%).The period of study was between October 2021 to September 2022 during which blood were collected from patients during treatment. Positive anti HBs was defined as Anti HBs \geq 10 mIU/ml and Negative Anti HBs if detected antibody level was of Anti HBs \leq 10 mIU/ml. A total of 165 Ulcerative Colitis patients (72.36%, 83 Males,82 Females) were Anti HBs negative and Anti HBc Total negative (Table 1). This meant that 72.36% of Ulcerative Colitis patients were not vaccinated against Hepatitis B virus. Only 21.05% of Ulcerative Colitis patients (n=48, 28 Males,20 Females) were positive for Anti HBs and negative for Anti HBc Total, meaning that they had taken HBV vaccinations earlier.All patients were negative for HBsAg and also negative for anti HCV.

Table No. 1. Serology Profile of Ulcerative Colitis Patients (n = 228,116 Males,112 Females)

Sl. No.	Serology Markers	No. of Ulcerative Colitis Patients	Percentage
1.	Anti HBs Negative + Anti HBc Total Negative	165	72.36 %
2.	Anti HBs Positive + Anti HBc Total Negative	48	21.05 %
3.	Anti HBs Positive + Anti HBc Total Positive	15	6.57 %

Note : Anti HBs Positive : $>$ 10 mIU/ml , Anti HBs Negative : $<$ 10 mIU/ml , All were HBsAg, Anti HCV

The mean Anti HBs titers varied in different age groups among Ulcerative Colitis patients.(Table 2). Higher mean Anti HBs titer was among 14-24 years, 25-34 years and 35-44 years of Ulcerative Colitis patients. Patients between 45 to 54 years had lower level of anti HBs antibodies.

Table No. 2. Anti HBs Titers among Ulcerative Colitis Patients (n = 48)

Sl. No.	Age Group	Anti HBs Titers (Mean \pm S.D.)
1.	14 - 24 years (n = 19)	220.72 mIU/ml \pm 163.70 (Range 40 - 520 mIU/ml)
2.	25 - 34 years (n = 12)	221.53 mIU/ml \pm 198.13 (Range 20 - 650 mIU/ml)
3.	35 - 44 years (n = 10)	201.37 mIU/ml \pm 170.12 (Range 15 - 470 mIU/ml)
4.	45 - 54 years (n = 6)	110.25 mIU/ml \pm 96.34 (Range 14 - 350 mIU/ml)
5.	$>$ 55 years (n = 1)	90 mIU/ml

Note : All UC patients were Anti HBc Total Negative

A total of 15 Ulcerative Colitis patients (15/228,6.57 %) were Anti HBc Total positive signifying previous exposure to HBV infection. The mean Anti HBs titers among these 15 patients(6 Males,9 Females) was 337.06 mIU/ml \pm 203.36 (Mean \pm S.D).

V. Discussion

In India Hepatitis B vaccination was launched in 2002 in 14 metropolitan cities. Later Hepatitis B vaccine was introduced in the Universal Immunization Program (UIP) of 10 states in 2007-2008 (4). In present study 72.36% of Ulcerative Colitis patients had no protection against Hepatitis B virus infection as they had undetectable Anti HBs. This could be due to many factors e.g. due to lack of awareness about HBV vaccination, cost of vaccine, low socio economic group, rural background etc. The WHO scientific advisory group of experts (SAGE) to Global Programme for vaccines and immunization (GPV) has indicated the need to expand immunization activities beyond infancy, either as a part of routine immunization services or as a part of disease eradication measures.A study from Korea has shown that nonimmunity against HBV infection (negative HBsAg and negative anti-HBc results and anti-HBs level of $<$ 10 mIU/mL) was detected in 30.3% patients of Ulcerative colitis (5). The number of HBsAg carriers in India is estimated to be over 40 million, hence the need for Hepatitis B vaccine coverage in adults become more important (6). Despite heavy burden of diseases, vaccines recommended for adults are not widely used due to various reasons. These could be that there is limited perception on the part of health care providers and beneficiaries that adult vaccine preventable diseases are significant health problems.The Hepatitis B vaccination is indicated in all unvaccinated adults at risk for HBV infection and among all adults seeking protection from HBV infection including post- exposure prophylaxis. The Advisory Committee

on Immunization Practices (ACIP) has recommended Hepatitis B vaccination in all infants, unvaccinated children aged < 19 years, adults aged 19 through 59 years, adults aged 60 years and older with risk factors for Hepatitis B (7). In present study Anti HBs titers in vaccinated Ulcerative Colitis patients (Anti HBc Total negative) in 14 to 24 years age group was 220.72 mIU/ml \pm 163.70 SD (range : 40 - 520 mIU/ml). A study from Korea showed that the median titer of the patients with IBD was 44.20 mIU/mL (5). Since Anti HBc Total was positive in 15 Ulcerative Colitis patients (6.57%), it is important to test for Anti HBs and Anti HBc Total in all adult patients before giving complete dose of Hepatitis B vaccine. A study from Delhi has found Anti HBc Total positivity of 19.8% in voluntary blood donors (8). Similar study from Kerala showed prevalence of 14.6% for positive Anti HBc Total among HBsAg negative blood donors (9). In present study 6.57% (15/228) of patients with Ulcerative Colitis were Anti HBc Total positive with Anti HBs antibodies (337.06 mIU/ml \pm 203.36). The prevalence of past infection (negative HBsAg, positive anti-HBc, and positive or negative anti-HBs results) was 24.7% in Ulcerative colitis patients from Korea (5). Also, it was found that the success rate of Hepatitis B immunization in IBD patients verified by protective antibody levels with the usual vaccination schedule, is very low compared to the general population (10). Hence the need for estimation of Hepatitis B vaccination status in Ulcerative colitis patients by testing anti-HBs and anti HBc Total is important during hospital consultation.

VI. Conclusion

72.36% of Ulcerative Colitis patients attending Nehru Hospital, PGIMER were not vaccinated against Hepatitis B virus. Patients attending hospitals should be tested for HBsAg, Anti-HBs, Anti HBc Total as a routine in order to vaccinate them for Hepatitis B Vaccine. So patients attending hospital for various other ailments can be given Hepatitis B vaccine after testing their HBsAg, Anti HBc Total and anti-HBs level. Since details of patients are known, hence they can be pursued or contacted by their phone to urgently get vaccinated against Hepatitis B virus with three dosage schedules. Similar studies needed from other wards of the hospital to understand the urgent need for wider HBV vaccination coverage.

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