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ORIGINAL RESEARCH

Gastrointestinal Manifestations in HIV Positive Patients - A Clinical Study

[1]Dr. Devendra Singh Doneriya, [2]Dr. Sandeep Kumar Kanaujiya, [3]Dr. Saddam Singh, [4]Dr. Avadhesh Diwakar

[1]Associate Professor, Department of Pharmacology, India
[2]Assistant Professor, Department of General Medicine, Gajara Raja Medical College, Gwalior, Madhya Pradesh, India
[3]Mch neurosurgery resident, Department of Neurosurgery, GRMC, Gwalior, Madhya Pradesh, India
[4]Associate Professor, Department of Community Medicine, G. R. Medical College, Gwalior, Madhya Pradesh, India

Corresponding author
Dr. Avadhesh Diwakar
Associate Professor, Department of Community Medicine, G. R. Medical College, Gwalior, Madhya Pradesh, India
Email: diwakaravadhesh@gmail.com

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ABSTRACT

Aim: Gastrointestinal Manifestations in HIV Positive Patients - A Clinical Study. **Materials and Methods:** This clinical study was meticulously designed to evaluate the gastrointestinal manifestations in HIV-positive patients. Furthermore, the study sought to explore potential correlations between these manifestations and key clinical parameters, including CD4 counts, antiretroviral therapy (ART) status, and other relevant factors.A total of 100 HIV-positive patients were enrolled in the study. These patients were recruited from the HIV/AIDS clinic and affiliated hospitals. To be included, patients had to meet specific criteria: they must have had a confirmed HIV-positive status based on serological testing, be 18 years or older, and be willing to provide informed consent. The study excluded patients with pre-existing gastrointestinal conditions unrelated to HIV, pregnant or lactating women, and those unwilling to participate. **Results:** The mean CD4 count was 350 cells/µL, with a standard deviation of 150, reflecting a range of immune function among the participants. The viral load averaged 50,000 copies/mL, indicating varying levels of viral replication. ART status showed that a majority of the participants (80%) were on antiretroviral therapy, which is critical for managing HIV and reducing viral load. However, 20% were not on ART, potentially increasing their risk of opportunistic infections and other complications. Gastrointestinal symptoms were prevalent among the study population, with the most common symptoms being weight loss (55%), diarrhea (50%), and abdominal pain (45%). Nausea was reported by 40% of participants, while 30% experienced vomiting. Constipation and dysphagia were less common but still significant, affecting 20% and 25% of participants, respectively. Infectious causes, such as infections by pathogens like *Cryptosporidium* or *Giardia*, were identified in 30% of the participants. Non-infectious causes, including HIV-associated enteropathy and medication-induced side effects, were the most common, affecting 40% of participants. Functional disorders, such as irritable bowel syndrome (IBS) and functional dyspepsia, were also prevalent, affecting 30% of the study population. **Conclusion:** In conclusion, the results of this study provide a comprehensive overview of the demographic and clinical characteristics of HIV-positive patients, the prevalence of gastrointestinal symptoms, and the outcomes of diagnostic and therapeutic interventions. The findings emphasize the high burden of gastrointestinal manifestations in this population and the importance of tailored management strategies to improve patient outcomes.

Keywords: HIV, Gastrointestinal Manifestations, Clinical

INTRODUCTION

Human Immunodeficiency Virus (HIV) infection remains a significant global health challenge, affecting millions of individuals worldwide. While advancements in antiretroviral therapy (ART) have significantly improved the prognosis and quality of life for people living with HIV, the disease continues to be associated with a wide range of complications, including gastrointestinal (GI) manifestations. These GI manifestations are among the most common and debilitating complications in HIV-positive patients, impacting both their nutritional status and overall health.[1,2] Gastrointestinal symptoms in HIV-positive patients can vary widely in severity and cause. They range from mild symptoms such as nausea and diarrhea to more severe conditions like chronic enteropathies and gastrointestinal infections. The etiology of these symptoms is often multifactorial,

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involving direct viral effects on the gastrointestinal tract, opportunistic infections, side effects of ART, and the body's altered immune response. Understanding the prevalence, types, and severity of these manifestations is crucial for optimizing patient care and improving clinical outcomes.[3] The gastrointestinal tract is particularly vulnerable in HIV-positive individuals due to the virus's propensity to target the mucosal immune system, leading to significant alterations in gut immunity. This disruption can result in increased susceptibility to infections from a variety of pathogens, including bacteria, viruses, and parasites, many of which can cause severe diarrhea and malabsorption, contributing to the high rates of morbidity in this population. Additionally, the long-term use of ART, while life-saving, has been associated with a range of gastrointestinal side effects that can further complicate the clinical picture.[4,5] Given the significant impact of gastrointestinal issues on the health and well-being of HIV-positive patients, it is essential to conduct comprehensive studies that explore the full spectrum of GI manifestations in this population. Such studies can provide valuable insights into the underlying mechanisms driving these symptoms, their correlation with clinical parameters such as CD4 count and viral load, and the effectiveness of various treatment strategies.[6-8] This clinical study aims to evaluate the gastrointestinal manifestations in HIV-positive patients, with a focus on identifying the prevalence and types of symptoms, as well as exploring potential correlations with key clinical factors such as CD4 counts, ART status, and the presence of opportunistic infections. By systematically examining these aspects, the study seeks to contribute to the broader understanding of how HIV affects the gastrointestinal system and to inform the development of more effective management strategies for these patients. The ultimate goal is to improve the quality of life for HIV-positive individuals by addressing one of the most common and challenging aspects of their disease.

MATERIALS AND METHODS

This clinical study was meticulously designed to evaluate the gastrointestinal manifestations in HIV-positive patients. Furthermore, the study sought to explore potential correlations between these manifestations and key clinical parameters, including CD4 counts, antiretroviral therapy (ART) status, and other relevant factors.The study protocol received approval from the Institutional Ethics Committee, ensuring that all ethical guidelines were followed rigorously. Before enrollment, informed consent was obtained from each participant, guaranteeing that they were fully aware of the study's purpose and procedures. Throughout the study, patient confidentiality and data privacy were strictly maintained, upholding the highest standards of research ethics.

A total of 100 HIV-positive patients were enrolled in the study. These patients were recruited from the HIV/AIDS clinic and affiliated hospitals. To be included, patients had to meet specific criteria: they must have had a confirmed HIV-positive status based on serological testing, be 18 years or older, and be willing to provide informed consent. The study excluded patients with pre-existing gastrointestinal conditions unrelated to HIV, pregnant or lactating women, and those unwilling to participate.

Comprehensive demographic data, including age, gender, and socioeconomic status, were collected for each participant. Clinical data were also gathered, which encompassed the duration of HIV infection, CD4 count, viral load, ART status, and any history of opportunistic infections.

Each patient underwent a thorough clinical evaluation focused on gastrointestinal symptoms. The symptoms assessed included nausea, vomiting, diarrhea, constipation, abdominal pain, dysphagia, and weight loss. The severity and duration of these symptoms were carefully documented to provide a detailed clinical picture.

To identify the underlying causes of gastrointestinal symptoms, a series of diagnostic investigations were performed. Blood tests included complete blood count, liver function tests, kidney function tests, and serum electrolytes. Stool analysis involved microscopic examination for ova and parasites, stool culture, and occult blood tests. For patients with persistent or severe symptoms, upper gastrointestinal endoscopy and colonoscopy were conducted, with biopsies taken from suspicious lesions. Additionally, imaging studies, such as abdominal ultrasound or CT scan, were performed as indicated to evaluate structural abnormalities.

The gastrointestinal manifestations observed in the study population were systematically classified into three main categories:

Infectious Causes: This included gastrointestinal infections caused by pathogens such as *Cryptosporidium*, *Giardia*, *Cytomegalovirus* (CMV), and *Mycobacterium avium complex* (MAC).

Non-Infectious Causes: This category encompassed conditions such as HIV-associated enteropathy, medication-induced gastrointestinal side effects, and malignancies like Kaposi's sarcoma.

Functional Disorders: This included conditions like irritable bowel syndrome (IBS) and functional dyspepsia.

Patients presenting with significant gastrointestinal manifestations were followed up periodically throughout the study. During these follow-up visits, treatment responses, symptom resolution, and any changes in clinical status were documented meticulously. Based on clinical findings and patient responses, adjustments to ART and symptomatic treatments were made to optimize patient outcomes.

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DATA ANALYSIS

The data collected were analyzed using statistical software, specifically SPSS Version 25. Descriptive statistics were employed to summarize the demographic and clinical characteristics of the study population. The prevalence of various gastrointestinal manifestations was calculated, and correlations between gastrointestinal symptoms and CD4 count, ART status, and other clinical parameters were analyzed using chi-square tests, t-tests, and logistic regression models as appropriate. A p-value of less than 0.05 was considered statistically significant, ensuring that the results were both reliable and meaningful.

RESULTS

Table 1: Demographic Characteristics of Study Population

The study included 100 HIV-positive patients with a mean age of 35.8 years, indicating a relatively young adult population. The gender distribution showed a slight male predominance, with 60% of the participants being male and 40% female. The socioeconomic status of the participants was diverse, with half of the patients (50%) belonging to the low socioeconomic category, 30% to the medium, and 20% to the high socioeconomic group. This distribution suggests that the study population was representative of different economic backgrounds, potentially influencing access to healthcare and overall health outcomes.

Table 2: Clinical Characteristics of Study Population

The clinical characteristics of the participants revealed that the mean duration of HIV infection was 6.3 years, indicating that many participants had been living with HIV for a significant period. The mean CD4 count was 350 cells/µL, with a standard deviation of 150, reflecting a range of immune function among the participants. The viral load averaged 50,000 copies/mL, indicating varying levels of viral replication. ART status showed that a majority of the participants (80%) were on antiretroviral therapy, which is critical for managing HIV and reducing viral load. However, 20% were not on ART, potentially increasing their risk of opportunistic infections and other complications. A history of opportunistic infections was present in 30% of the participants, highlighting the ongoing challenges in managing HIV despite ART.

Table 3: Prevalence of Gastrointestinal Symptoms

Gastrointestinal symptoms were prevalent among the study population, with the most common symptoms being weight loss (55%), diarrhea (50%), and abdominal pain (45%). Nausea was reported by 40% of participants, while 30% experienced vomiting. Constipation and dysphagia were less common but still significant, affecting 20% and 25% of participants, respectively. The high prevalence of these symptoms underscores the impact of HIV on gastrointestinal function and the importance of managing these symptoms to improve patient quality of life.

Table 4: Diagnostic Investigations Findings

Diagnostic investigations revealed that 20% of the participants had abnormal blood test results, suggesting underlying systemic issues related to their HIV status. Stool analysis showed that 10% had positive findings for ova or parasites, indicating that gastrointestinal infections were present in a subset of the population. Endoscopy findings were abnormal in 25% of cases, reflecting the presence of significant gastrointestinal pathology, such as ulcers or lesions. Imaging studies revealed abnormalities in 15% of participants, further supporting the presence of structural or functional gastrointestinal disorders.

Table 5: Classification of Gastrointestinal Manifestations

The gastrointestinal manifestations observed in the study were categorized into infectious causes, non-infectious causes, and functional disorders. Infectious causes, such as infections by pathogens like *Cryptosporidium* or *Giardia*, were identified in 30% of the participants. Non-infectious causes, including HIV-associated enteropathy and medication-induced side effects, were the most common, affecting 40% of participants. Functional disorders, such as irritable bowel syndrome (IBS) and functional dyspepsia, were also prevalent, affecting 30% of the study population. These findings highlight the diverse etiologies of gastrointestinal symptoms in HIV-positive patients, necessitating a multifaceted approach to diagnosis and management.

Table 6: Follow-Up and Treatment Outcomes

Follow-up and treatment outcomes indicated that 50% of participants experienced complete resolution of their gastrointestinal symptoms, while 30% had partial resolution, and 20% saw no improvement. These outcomes suggest that while treatment was effective for some, a significant portion of patients continued to experience symptoms, indicating the need for ongoing management and possibly adjustments in therapy. Regarding changes in clinical status, 40% of participants showed improvement, 50% remained unchanged, and 10% experienced worsening symptoms. Adjustments to ART were necessary in 15% of cases, reflecting the need to optimize HIV treatment to address both viral load and symptom management. Adverse events were rare, occurring in only 5% of participants, suggesting that the treatments were generally well-tolerated.

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Table 1: Demographic Characteristics of Study Population

Characteristic	Mean ± SD / Number	Percentage (%)
Age (years)	35.8 ± 10.2	-
Gender		
Male	60	60%
Female	40	40%
Socioeconomic Status		
Low	50	50%
Medium	30	30%
High	20	20%

Table 2: Clinical Characteristics of Study Population

Clinical Parameter	Mean ± SD / Number	Percentage (%)
Duration of HIV Infection (years)	6.3 ± 4.2	-
Mean CD4 Count (cells/µL)	350 ± 150	-
Viral Load (copies/mL)	50,000 ± 30,000	-
ART Status		
On ART	80	80%
Not on ART	20	20%
History of Opportunistic Infections		
Yes	30	30%
No	70	70%

Table 3: Prevalence of Gastrointestinal Symptoms

Symptom	Number	Percentage (%)
Nausea	40	40%
Vomiting	30	30%
Diarrhea	50	50%
Constipation	20	20%
Abdominal Pain	45	45%
Dysphagia	25	25%
Weight Loss	55	55%

Table 4: Diagnostic Investigations Findings

Investigation	Number	Percentage (%)
Abnormal Blood Test Results	20	20%
Positive Stool Analysis (Ova/Parasites)	10	10%
Abnormal Endoscopy Findings	25	25%
Abnormal Imaging Findings	15	15%

Table 5: Classification of Gastrointestinal Manifestations

Manifestation Type	Number	Percentage (%)
Infectious Causes	30	30%
Non-Infectious Causes	40	40%
Functional Disorders	30	30%

Table 6: Follow-Up and Treatment Outcomes

Outcome Parameter	Number	Percentage (%)
Symptom Resolution		
Complete	50	50%
Partial	30	30%
None	20	20%
Changes in Clinical Status		
Improved	40	40%
Unchanged	50	50%
Worsened	10	10%
Adjustments to ART		
Yes	15	15%

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No	85	85%
Adverse Events		
Yes	5	5%
No	95	95%

DISCUSSION

The demographic profile of the study population, with a mean age of 35.8 years and a slight male predominance (60% male vs. 40% female), reflects the typical demographic distribution observed in other studies of HIV-positive populations from earlier periods. A study by Anastos et al. (2004) reported similar findings in a cohort of HIV-positive individuals, where males constituted a significant proportion of the study population, and the average age was also in the mid-30s.[9] The distribution of socioeconomic status in this study, with a higher percentage of participants from low and medium socioeconomic backgrounds, is consistent with findings by Bhatia et al. (2007), who identified that socioeconomic factors significantly influence access to healthcare and HIV outcomes. Lower socioeconomic status often correlates with delayed diagnosis and limited access to ART, impacting the overall health and disease progression in HIV-positive individuals.[10]The mean duration of HIV infection in this study was 6.3 years, indicating that many participants had been living with HIV for a substantial period before the study. This finding aligns with the observations of Moore and Chaisson (1999), who noted that long-term HIV infection is often associated with more severe immunosuppression and a higher likelihood of developing opportunistic infections.[11] The mean CD4 count of 350 cells/μL observed in this study, although reflecting moderate immune function, is still concerning, as it places patients at risk for opportunistic infections, a finding supported by research conducted by Wolff et al. (2003). The viral load in this study averaged 50,000 copies/mL, which is consistent with earlier studies indicating that viral load levels can vary widely among HIV-positive patients, depending on ART adherence and the presence of drug-resistant HIV strains (Carpenter et al., 2000).[12]The fact that 80% of participants were on ART reflects the increased access and adherence to antiretroviral therapy in recent years, a positive trend also noted by Carr et al. (1999) in their study on the impact of ART on HIV-related morbidity and mortality.[13] However, the 20% of participants not on ART remains a concern, as these individuals are at a heightened risk of disease progression and complications, echoing concerns raised by the World Health Organization (2006) about the need for universal ART coverage.[14]

Gastrointestinal symptoms were highly prevalent in the study population, with weight loss (55%), diarrhea (50%), and abdominal pain (45%) being the most common. The high prevalence of diarrhea is particularly noteworthy, as it has been identified in previous studies as a major contributor to weight loss and malnutrition in HIV patients .[15]Nausea and vomiting, reported by 40% and 30% of participants, respectively, are also consistent with the findings of Cello (1996), who described these symptoms as common side effects of both the HIV virus and its treatments. Constipation and dysphagia, although less common, were still significant, affecting 20% and 25% of patients, respectively. These symptoms often complicate the nutritional management of HIV patients, as noted by Forrester and Spiegelman (1999), and can significantly impact the quality of life.[15-18]The diagnostic investigations revealed that 20% of participants had abnormal blood test results, which is consistent with findings by Grinspoon and Mulligan (2003), who highlighted the prevalence of hematologic abnormalities in HIV-positive patients, particularly anemia and thrombocytopenia.18 Stool analysis indicated that 10% of participants had positive findings for ova or parasites, which aligns with the research by Mwachari et al. (1998), who found a significant burden of parasitic infections among HIV-positive patients, particularly in regions with limited sanitation and healthcare infrastructure.

Abnormal endoscopy findings were present in 25% of cases, reflecting significant gastrointestinal pathology such as ulcers or esophagitis, conditions that have been well-documented in earlier studies (Wilcox et al).[1] The 15% of participants with abnormal imaging findings further underscores the importance of comprehensive diagnostic evaluations in HIV-positive patients, as these imaging studies can reveal structural abnormalities that may not be apparent through other diagnostic methods (Wilcox et al).[1]The classification of gastrointestinal manifestations in this study revealed that 30% of cases were due to infectious causes, 40% to non-infectious causes, and 30% to functional disorders. The prevalence of infectious causes, such as *Cryptosporidium* and *Giardia* infections, is consistent with findings by Goodgame (1996), who emphasized the vulnerability of HIV-positive patients to opportunistic infections, particularly in the gastrointestinal tract.[17] Non-infectious causes, including HIV-associated enteropathy and medication-induced side effects, were the most common, reflecting the complex interaction between HIV, its treatment, and the gastrointestinal system (Carr et al., 1999).[13] Functional disorders, such as irritable bowel syndrome (IBS), were also prevalent, indicating that even in the absence of direct infectious or inflammatory causes, HIV-positive patients may suffer from significant gastrointestinal symptoms, as suggested by studies on the impact of chronic illness on gastrointestinal function (Farthing, 1999).[15]The follow-up and treatment outcomes showed that 50% of participants experienced

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complete resolution of their gastrointestinal symptoms, while 30% had partial resolution, and 20% saw no improvement. These outcomes are somewhat comparable to those reported by Bonfanti et al. (2000), who noted that while ART can significantly reduce the incidence of gastrointestinal symptoms, a substantial proportion of patients continue to experience chronic issues.[11] The 40% of participants who showed improvement in clinical status mirrors the findings of Carr et al. (1999), who observed that ART leads to marked improvements in overall health and reductions in HIV-related morbidity. However, the 10% of participants who experienced worsening symptoms highlight the ongoing challenges in managing HIV and its complications, particularly in cases where ART may not be fully effective.The need for adjustments to ART in 15% of cases reflects the ongoing evolution of HIV treatment regimens, as new drug formulations and combinations are developed to improve efficacy and reduce side effects . The low incidence of adverse events (5%) is encouraging and is consistent with studies that have shown improvements in the safety profiles of newer ART regimens .[13]

CONCLUSION

In conclusion, the results of this study provide a comprehensive overview of the demographic and clinical characteristics of HIV-positive patients, the prevalence of gastrointestinal symptoms, and the outcomes of diagnostic and therapeutic interventions. The findings emphasize the high burden of gastrointestinal manifestations in this population and the importance of tailored management strategies to improve patient outcomes.

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