Research Article

INTERNATIONAL RESEARCH JOURNAL OF PHARMACY

www.irjponline.com

ISSN 2230-8407 [LINKING]

STUDYING THE CLINICAL EFFICACY OF ULTRASONOGRAPHY IN INDIAN HIV PATIENTS UTILIZING AN ABDOMINAL PROBE.

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How to cite: Banerjee K, Shailja S. Studying the clinical efficacy of ultrasonography in Indian HIV patients utilizing an abdominal probe. International Research Journal of Pharmacy, 2021,12:3:36-39.

Doi:10.7897/2230-8407.1203131

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ABSTRACT

Background: HIV's first target is the immune system, followed by abdominal diseases shown in AIDS patients after pulmonary symptoms. These abdominal symptoms are steadily rising, which can be related to these subjects' immunocompromised condition as well as antiretroviral medication, which has enhanced life expectancy in HIV patients.

Aims to investigate the clinical value of ultrasonography in Indian HIV patients utilizing abdominal probes, as well as the abdominal findings in these people.

Methods: The study analyzed 120 patients with a confirmed clinical diagnosis of HIV, 46 female and 74 male subjects between the ages of 20 and 65 years who attended the institution throughout the study period. The bulk of the individuals were between the ages of 40 and 49 years. The abdominal findings in these participants were evaluated utilizing ultrasonography, an abdominal probe, and color Doppler tests.

Results: The study's findings revealed that six of the 120 participants evaluated had no abdominal abnormalities. Hepatic abscess, fatty hepatic alterations, and hepatomegaly were detected in 2, 28, and 66 patients, respectively. Splenic abscess, splenomegaly, and lymphadenopathy were reported in 12, 40, and 56 individuals, respectively. In ten participants, the bowel wall thickened significantly, particularly at the ileocecal junction and ileum.

Conclusions: The current study suggests that ultrasonography is useful for the clinical care of AIDS patients with high requirements in underdeveloped countries like India. Sonography results for abdominal abnormalities are comparable to those from other diagnostic modalities such as CT. The low cost, diagnostic accuracy, and ease of access make USG the primary option for examining the abdomen. However, increased clinic-pathological correlation can enhance diagnosis accuracy.

Keywords: AIDS, HIV, abdominal findings, immunocompromised, ultrasound.

INTRODUCTION

AIDS (acquired immunodeficiency syndrome) is a clinical disorder caused by HIV infection that is of major concern to the social and healthcare sectors across the world, including in India, due to its fast-rising incidence. In the human body, HIV (human immunodeficiency virus) continues to assault the immune system.

Furthermore, the prevalence of stomach illnesses in AIDS/HIV patients is considered to be highest only after pulmonary diseases. The cytopathic retrovirus damages the immune system, resulting in a variety of opportunistic infections and malignancies. Sex workers worldwide, especially in India, are at the highest risk of contracting AIDS.1 In 1992, NACO (National AIDS Control Organization) began the National AIDS Control Program. Following this, NACP I,

II, III, and IV were started in 1999, 2007, 2012, and 2017, respectively. The 1992 program was primarily responsible for the national HIV surveillance system and preventative actions among High-Risk Groups (HRGs), which included HIV and blood safety information.

India has the third greatest AIDS pandemic, according to 2016 data, due to its enormous population. The highest frequency was seen in Nagaland, Mizoram, and Manipur, with a moderate prevalence in the remaining Northern states.2

According to India's 2015 report, HIV mostly affects people aged 15 to 49 years, with a prevalence of 0.26%, 0.22% in female subjects and 0.30% in male subjects. HIV prevalence in adults has steadily declined between 200 and 2015. Because ultrasonography is inexpensive and widely available, it may be extremely useful in diagnosis and follow-up, as well as conducting surgeries on HIV-positive people, particularly in poor countries such as India. Degenerative changes, metabolic abnormalities, inflammatory modifications, infections, and/or malignancies are all examples of comorbidities that can be detected early with ultrasonography.3

Other radiographic modalities, such as MRI (magnetic resonance imaging) and CT (computed tomography), aid in the better assessment and characterization of HIV-related abdominal findings; however, they are less available in high-prevalence areas and are more cost-effective, making them an alternative choice for radiological investigations. Furthermore, in follow-up instances, ultrasonography is the preferable modality. Disease progression is properly evaluated using CD4 counts because immunosuppression is connected to CD4 levels, and diverse manifestations of this include CMV, fungal infections, and tuberculosis. Various malignancies related with HIV include cervical cancer, Kaposi sarcoma, Burkitt's lymphoma, and NHL.4

The purpose of this study was to evaluate the clinical value of ultrasonography in Indian HIV patients utilizing abdominal probes, as well as to evaluate abdominal results.

MATERIALS AND METHODS

The current observational study sought to evaluate the clinical value of ultrasonography in Indian HIV patients utilizing abdominal probes, as well as the abdominal findings in these patients. The research subjects were members of the Institute's Department of Radiology. All individuals provided verbal and written informed permission before participating in the study. The current study analyzed and studied 120 people of both genders with confirmed serological HIV diagnoses, using both linear and convex probes at frequencies of 7.5MHz and 4.5MHz, respectively. To reduce intestinal artifacts on ultrasonography, subjects were returned after a 12-hour overnight fast.

The assessment was conducted after obtaining consent from individuals in lateral and supine positions. X-rays and USG were used to detect early abnormalities. The study's inclusion criteria were seropositive patients above the age of 20 who were willing to participate. The study excluded participants who did not provide consent, had social fear, were under 20 years old, or had incomplete examinations.

AIDS/HIV creates a variety of clinical symptoms and affects several organs/systems. USG may monitor immunosuppression in all abdominal organs using a high-frequency probe, including the retroperitoneum. Color Doppler provides additional information on nodes, lesions, and the organ's vascularity.

Guided biopsies provide cytopathological information. Lymphadenopathy was defined as an enlarged lymph node with a short axis diameter of more than 1 cm, hepatomegaly ranging from 13.5 to 15 cms in the midclavicular line in adults, craniocaudal length, and splenomegaly with a splenic span greater than 12 cm.5.6 CBD (common bile duct) diameter of 5-7 according on the patients' age in the most distal section of the head of pancreas. Electronic calipers were used to measure the anteroposterior diameter from inner to inner boundary. Color Doppler was used to analyze and validate the ductal and vascular architecture.

The collected data were statistically analyzed using SPSS (Statistical Package for the Social Sciences) software version 24.0 (IBM Corp., Armonk, NY, USA) for descriptive measures, Student t-test, ANOVA (analysis of variance), and Chi-square test.

The data were presented in the form of mean and standard deviation, as well as frequency and percentage. A p-value < 0.05 was considered statistically significant.

RESULTS

The current observational study sought to evaluate the clinical value of ultrasonography in Indian HIV patients utilizing abdominal probes, as well as the abdominal findings in these patients. The study evaluated 120 patients with a confirmed clinical diagnosis of HIV, including 46 females and 74 males aged 20 to 65 years who attended the institution throughout the study period. The bulk of the research volunteers (46 in total) were between the ages of 40 and 49, with 40 in the 30-39 age

range and 24 in the 20-29 age bracket. The participants that were least investigated were between the ages of 50 and 59 and 60 and 70.

There were various abdominal findings on ultrasonography, and six out of 120 patients had no abdominal abnormalities. The majority of participants demonstrated two or more discoveries. Anatomical results on ultrasonography in study individuals revealed acalculous cholecystitis, stone with cholecystitis, cervicitis/fluid in a pod, and a bulky pancreas in 3.33% (n=4). Hepatomegaly was seen in 55% (n=66) study subjects, fatty infiltration in 23.33% (n=28) study subjects, hepatic abscess in 1.66% (n=2) study subjects, lymphadenopathy in 46.66% (n=56) study subjects, splenomegaly in 30% (n=36) subjects, splenic abscess in 10% (n=12) study subjects, and ascites in 20% (n=24) study subjects, respectively (Table 1).

Bulky pancreas with dilated MPD and peripancreatic collection, gluteal abscess, cystitis, pyocele, and Bulky pancreas with peri pancreatic lymphadenopathy were all seen in 1.66% (n=2) of the study subjects respectively. Renal parenchymal disease was detected on ultrasonography in 3.33% (n=4) of study participants. Gall bladder wall thickening was observed in 6.66% (n=8) of the research patients, whereas bowel wall thickening and ascites with septations were detected in 8.33% (n=10) of the study individuals (Table 1).

DISCUSSION

The current study evaluated 120 patients with a confirmed clinical diagnosis of HIV, including 46 females and 74 males aged 20 to 65 years who attended the institution throughout the study period.

The bulk of the research volunteers (46 in total) were between the ages of 40 and 49, with 40 in the 30-39 age range and 24 in the 20-29 age bracket. The participants that were least investigated were between the ages of 50 and 59 and 60 and 70. There were various abdominal findings on ultrasonography, and six out of 120 patients had no abdominal abnormalities. The majority of the respondents reported two or more discoveries. These findings were comparable to earlier studies by Uygur-Bayramicli O et al7 in 2003 and Anjana T et al8 in 2015, in which authors analyzed HIV-positive participants and demographic data similar to the current research.

The study findings revealed that 3.33% (n=4) of study individuals had acalculous cholecystitis, a stone with cholecystitis, cervicitis/fluid in a pod, or a bulky pancreas. Hepatomegaly was seen in 55% (n=66) of the study subjects, fatty infiltration in 23.33% (n=28) of the study subjects, hepatic abscess in 1.66% (n=2) of the study subjects, lymphadenopathy in 46.66% (n=56) of the study subjects, splenomegaly in 30% (n=36) of the study subjects, splenic abscess in 10% (n=12) of the study subjects, and ascites in 20% (n=24) of the study subjects.

These findings were congruent with those of Kawooya MG9 in 2013 and Sokolina I et al10 in 2017, who reported anatomical findings on ultrasonography comparable to those in the current investigation. Bulky pancreas with dilated MPD and peripancreatic collection, gluteal abscess, cystitis, pyocele, and bulky pancreas with peri pancreatic lymphadenopathy were all found in 1.66% (n=2) of research patients. Renal parenchymal disease was detected on ultrasonography in 3.33% (n=4) of study participants. Gall bladder wall thickening was found in 6.66% (n=8) research individuals, whereas gut wall thickening and ascites with septations were seen in 8.33% (n=10) study patients each.

These findings were in agreement with the results of Rana A et al[11] in 2017 and Lodengo H et al[12] in 2000 where ultrasonographical findings in study subjects reported by the authors in their studies were comparable to the results of the present study.

CONCLUSIONS

Considering its limitations, the present study concludes that ultrasonography is appropriately suitable for clinical management of AIDS subjects with higher needs in developing nations such as India with sonography results being comparable to other diagnostic modalities such as CT (computed tomography) concerning abdominal findings. Affordable cost, diagnostic accuracy, and easy availability make USG as first choice in assessing the abdomen. However, further clinic-pathological correlation can improve the diagnostic accuracy.

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Abnormal findings	Number (n)	Percentage (%)
Ascites	24	20
Splenic abscess	12	10
Splenomegaly	36	30
Lymphadenopathy	56	46.66
Hepatic abscess	2	1.66
Fatty infiltration	28	23.33
Hepatomegaly	66	55
Bulky pancreas	4	3.33
Cervicitis/fluid in pod	4	3.33
Acalculous cholecystitis	4	3.33
Stone with cholecystitis	4	3.33
Gall bladder wall thickening	8	6.66
Bowel wall thickening	10	8.33
Ascites with septations	10	8.33
Gluteal abscess	2	1.66
Cystitis	2	1.66
Pyocele	2	1.66
Renal parenchymal disease	4	3.33
Bulky pancreas with peri pancreatic lymphadenopathy	2	1.66
Bulky pancreas with dilated MPD and peripancreatic collection	2	1.66

Table 1: Anatomical findings on ultrasound in study subjects