

Research Article**Abdominal Ultrasonography Findings in HIV Infected Patients****Dr Anjana Trivedi¹, Dr Aarti Trivedi², Dr Manisha Panchal³, Dr Maulik Jethva⁴, Dr Manish Yadav^{5*}**¹Professor and Head Dept of Radiodiagnosis, ²Professor of dept of Medicine, ³Assistant professor dept of medicine,⁴Assistant professor dept of Radiodiagnosis, ⁵Second year resident dept of Radiodiagnosis, PDU Medical College and Civil Hospital, Rajkot, Gujarat, India***Corresponding author**

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Abstract: The objective of the study was to describe the findings on ultrasonography in HIV/AIDS patients in civil hospital Rajkot during period of six month. A Prospective evaluation of the abdominal ultrasonography of 300 HIV-positive patients was carried out at the Civil Hospital, Rajkot. Of the 300 cases studied, 210 (70%) were males and 90(30%) were females; the mean age was 38 years, (range 15–65 years). The disease was most prevalent in the 3rd decade with an incidence of 41%. The HIV+ group of patients had a significantly higher proportion of lymphadenopathy (18%), splenomegaly (12%), splenic infiltration (9%), hepatomegaly (7%) and renal abnormalities (5%). There were significantly fewer gallstones in the HIV+ group (2%). The use of ultrasound as a baseline imaging modality in HIV-infected patients should be promoted. Its use is invaluable in the assessment of the disease state and in the monitoring of therapy and management of these immunocompromised individuals.**Keywords:** Hepatomegaly, Splenomegaly, Splenic infiltration, Lymphadenopathy

INTRODUCTION

HIV infection is a major public health concern worldwide, the prevalence of AIDS in India in 2013 was 0.27, and about 2.39 million people are living with HIV/AIDS in India according to National AIDS Control Organization of India [1]. This cytopathic retrovirus destroys the immune system that leads to opportunistic infections and tumours. Various organs of the body may be affected, leading to a variety of clinical presentations. Radiology plays an important role in the management. Radiologic tools such as ultrasonography serve both diagnostic and interventional roles, and assist in directing appropriate therapy. Tools like Computed Tomography (CT) and Magnetic Resonance Imaging (MRI) techniques help in better characterization of HIV-related abdominal diseases, but are expensive and unavailable in the typically impoverished, HIV-infected regions [2].

CD4+ count is a good index for monitoring progression of the disease as the degree of immunodeficiency is related to the level of the CD4+ count [3]. It is expected that with the declining immune status, susceptibility to infection and consequently abnormal sonographic findings should increase [2].

Aim

- To describe the abdominal findings in HIV/AIDS Patients on ultrasonography.
- To compare its findings with previous studies.

MATERIALS AND METHODS

Abdominal ultrasound scans were prospectively performed over a six month period (July 2014–Dec 2014) on 300 consecutive eligible HIV-positive adults (aged 15– 66 years) referred from the Antiretroviral Clinic at the Civil Hospital, Rajkot to the Department of Radiology for routine diagnostic imaging.

Inclusion Criteria include all patients which were found positive on serological testing and were referred from ART centre of our institute.

HIV-positive patients were subjected to routine chest X-ray and an abdominal Ultrasonography for early detection of abnormality and achievement of a base line. The ultrasound scans were performed after overnight fasting of at least 12 hours with patients lying supine. It was done by using a 3.5–5.0 MHz frequency curvilinear probe on an M ultrasound my LAB 50 and 20. Radiologists at civil hospital performed all sonographic examinations. Exclusion criteria include non-fasting patients, children, and patients with incomplete ultrasound examinations.

The presence of the abnormalities such as lymphadenopathy splenomegaly (with or without hypo or hyperechoic lesions), hepatomegaly (with or without

single or multiple focal lesions), gallbladder and bile duct abnormality, ascites, renal abnormalities with diffusely increased echogenicity were noted. The extrahepatic bile duct was identified at the level of the portal vein, where the hepatic artery crosses perpendicularly between them. Patient was asked to take several deep breaths and hold the inspiratory phase when bowel gas obscured a part of the suprapancreatic segment. In order to confirm the identification of vascular and ductal anatomy, Color Doppler sonography was used. Measurement of the common bile duct was done in the most distal aspect of the head of the pancreas. In this location, anteroposterior measurements from inner border to inner border were obtained [4].

Data were recorded in paper and thereafter in computer.

The condition in which the nodes are larger than 1 cm in diameter is considered as lymphadenopathy [5], spleen larger than 12 cm at its longest axis as splenomegaly [6], liver measuring more than 15 cm at longitudinal axis as hepatomegaly, common bile duct diameter (CBD) >7 mm as extrahepatic duct dilatation [4].

Demographic data of the patients were obtained from patients' record file. Informed consent was obtained from each patient.

RESULTS

Of the 300 cases, 210 (70%) were males and 90 were females; the mean age was 38.02 years, (range 15–66 years). The modal age group was the 3th decade with a frequency of 41% (Table 1).

Table 1: Age group distribution in HIV+ Patients

AGE-group(years)	Frequency	Percentage
10-19	15	5
20-29	65	22
30-39	123	41
40-49	62	21
50-59	28	9
>60 years	7	2

Table 2: Abdominal findings on ultrasonography

	Frequency	Percentage
Normal	218	72
Lymphadenopathy	53	18
Splenomegaly	37	12
Splenic infiltration	28	9
Hepatomegaly	22	7
Hepatic infiltration	5	2
Renal parenchymal disease	16	5
Gall bladder stone	8	3
Ascitis	4	1



Fig. 1: This coronal ultrasound image shows enlarged spleen with margin beyond the sector format



Fig. 2: This figure shows multiple enlarged retroperitoneal lymph nodes



Fig. 3: This image shows rt lobe of liver extending inferior pole of kidney and show hepatomegaly

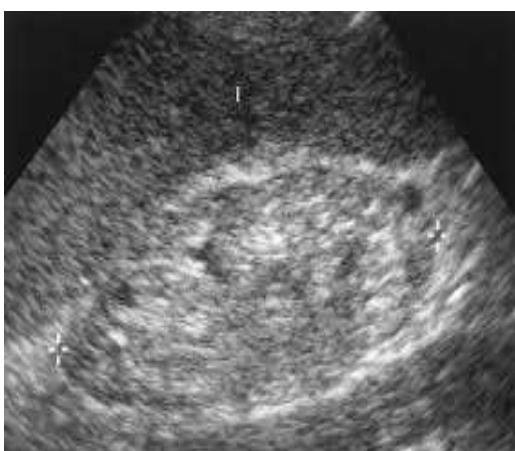


Fig. 4: This image shows increased ecogeneity of right kidney

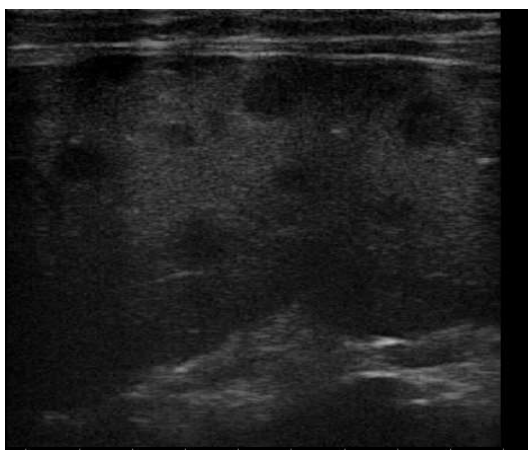


Fig. 5: This image shows multiple hypoechoic area in spleen suggesting splenic infiltration

DISCUSSION

Imaging plays an important role in the detection of various pathologies associated with AIDS. In many cases, the radiologist provides us the first clue in suspecting the possibility of an underlying HIV infection [7]. Abdominal symptoms are among the most frequent complaints of patients with AIDS. Since

precise diagnosis based on symptoms alone is very difficult in these patients, the contribution of radiology is important to reaching the diagnosis [8]. US offers a cheap avenue of diagnosing opportunistic infections in HIV. In 2003, Uygur-Bayramicli *et al.* showed that the most common abdominal US findings in HIV patients were ascites and hepatomegaly [9]. It had been earlier documented that microabscesses of the liver and spleen in AIDS patients could be detected with 5-MHz US [10]. There have been several publications on US findings in tuberculosis with HIV [11, 12]. Tarantino *et al.* reported the radiological features and the value of fine needle aspiration biopsy of the lymph nodes and spleen in AIDS patients with disseminated mycobacterial infection [13]. We documented focal splenic lesions in several patients, the majority of whom underwent FNAC and reached a definitive diagnosis. Porcel-Martin *et al.* documented the utility of abdominal US in detecting focal splenic lesions in patients with AIDS [14]. We do not found any pancreatic or biliary pathology.

Pancreas and biliary tract are reported to be the frequent sites of infectious, inflammatory and neoplastic diseases in patients with HIV infection. However, the symptoms of pancreaticobiliary involvement may be relatively mild so thus their prevalence is probably underestimated. Imaging findings of HIV-associated pancreaticobiliary disorders is important, because at times, involvement of these organs may be the only suggestion for establishing the diagnosis of AIDS [15].

Although the utility of US has been tried to be highlighted for the evaluation of visceral involvement and lymphadenopathy, it is prudent to remember that the use of US often needs to be supported by other appropriate diagnostic tools [16].

In our setting, US is provided free of charge whereas an abdominal computed tomography (CT) cost is high. The patients who could afford it were advised to undergo CT, and the findings correlated well with the US interpretation.

As prevalence of HIV is rising in India, it is important to develop cost-effective and affordable protocols for the management of it. Moreover, with long-term survival of HIV patients becoming the rule rather than the exception, patients need to be followed up with feasible options and guidelines. Tissue diagnosis and sophisticated imaging are difficult to access in our country. US assumes an even greater importance in the setting of worsening immune status [17].

CONCLUSION

We conclude that ultrasonography is a versatile tool for evaluating abdominal organs affected by HIV/AIDS. US should be used as an affordable

diagnostic tool for HIV patients in resource-poor settings, and it is particularly cost-effective in those patients with low CD4 counts.

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