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Ultrasonography Patterns for Spleen & Lymph Nodes in Aids Patients

KEYWORDS: Lymph nodes , Spleen, AIDS, ultrasound

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ABSTRACT *Introduction The acquired immunodeficiency syndrome (AIDS) is a retroviral disease caused by the human immunodeficiency virus (HIV) ,which is characterized by the profound immuno suppression leading to opportunistic infections, secondary neoplasms, and neurologic manifestation.*

Objective: To assess the spleen and lymph nodes patterns Ultrasonographically for AIDS patients.

Materials & Methods: Ultrasonographic of the spleen and lymph nodes were performed on 200 patients with known AIDS with concerning on spleen's and lymph nodes echogenicity. The effect of age, gender, onset, spleen parenchymal disease and lymph adenopathy was statistically analyzed.

Results: The data was discussed and presented in percentage and frequencies between patients age, sex, status, spleen and lymph nodes disease. Then statistically the results was analyzed.

Conclusion: The study proved that AIDS were subject to multiple abnormalities that can be diagnosed by ultrasound, this supports the use of ultrasound in AIDS units.

Recommendation: using ultrasound routinely in the treatment and diagnosis of AIDS units and follow up patients with AIDS, also researches could constitute a base for further research in this field.

Introduction

AIDS, the clinical entity resulting from HIV infection is an increasingly important disease that has become a social phenomenon. The sub-Saharan Africa region is by far the worst affected in the world by the AIDS epidemic. It is actually home over 60% of all people living with HIV. Through the major target of this deadly virus is the immune system, the frequency of abdominal disorders in patients with AIDS has been reported to be second only to pulmonary disease.(1)

In 2009, 33.3 million people were living with HIV worldwide, 2.6 million people newly infected with HIV worldwide, and 1.8 million people died of AIDS –related illness worldwide.(2,3)

In Sudan (September 2008) estimated number of adults and children living with HIV whether or not they have developed symptoms of AIDS as follows: adults > 15 years represented 270.000 VS children < 14 years represented 20.000.(4)

In the united states, the typical adult patient with AIDS present with fever, weight loss, diarrhea, generalized lymphadenopathy, multiple opportunistic infections, neurologic disease, and (in many cases) secondary neoplasms. Although the largest number of infections are in Africa, the most rapid increase in HIV infection in past decade are in south east Asian countries, including Thailand, India and Indonesia.(5) Opportunistic infections account for approximately 80% of deaths in patients with AIDS. Furthermore Pneumonia caused by the apportinunistic fungus pneumocystis carinii is the presenting feature in many cases. Among the most common are recurrent mucosal candiasis, disseminated cytomegalovirus infection, and disseminated infection with M.tuberculosis and typical mycobacteria. Patients with AIDS have a high incidence of certain tumors, particularly Kaposi sarcoma, non-Hodgkin lymphomas, and cervical cancer in women.(5)

From the epidemiologic and subsequent laboratory investigations the transmission of HIV occurs under conditions that facilitate the exchange of blood or body fluids that contain the virus or virus-infected cells. Thus, the three major routes are sexual contact, parenteral inoculation, and passage of virus from infected mothers to their newborn.(5)

Diagnostic ultrasound imaging provides; (1) a dynamic means of evaluating abdominal soft tissue structures in cross section and (2) provides information concerning the size, shape, and echo pattern, position of the organs and other structure.(6,7)

Sonographic findings of prevalent non-specific abdominal abnormalities associated with AIDS include splenomegaly, hepatomegaly hyperechoic liver parenchyma, gall bladder

Volume : 4 | Issue : 12 | Dec 2014 | ISSN - 2249-555X

wall thickening, lymphadenopathy, and nephropathy.(8)

The most common splenic ultrasound finding in patient with AIDS is moderate splenomegaly, reported with 50% to 70% of patients referred for abdominal ultrasound. Focal lesions can occur in patient with AIDS. These may be caused by opportunistic infections such as candida, neumocystis, or mycobacterium. There have been reports of disseminated pneumocystis appearing as tiny focal echoes through the liver, spleen, and kidneys. The spleen may also be involved in Kaposi's sarcoma or lymphoma.(9) Visualized lymph nodes (para- aortic) measured >10mm, the ultrasonographic criteria of enlargement of mesenteric lymphnodes has been variably defined as the detection of nodes larger than 4mm in the short axis and larger than 10mm in the long axis(10.11).

Objective:
To assess the Ultrasonography patterns of spleen and lymph nodes for AIDS patients.

Materials & Methods:
sample size
ethical consideration
A prospective, analytical, descriptive study deal with the abdominal ultrasound findings in AIDS patients, the study was conducted in Sudan at Omdurman Teaching Hospital at Voluntary and Counseling Testing Centre during the period from May 2009- October 2010 from 9 am- 2 pm every Sunday, Tuesday. Sample frame was comprised of two hundred confirmed positive HIV patients with signs and symptoms of AIDS were scanned by ultrasound. Selection of participation was done through simple random sampling concerned with spleen, peritoneum and lymph nodes changes. The patient examined in a fasting state, imposing dietary restrictions (avoidance of gas-producing foods), the water contrast method is also very suitable for demonstrating the wall of hollow organs such as (the bladder, gall bladder, and stomach), and special positioning.(10) Usually the examination is carried out with the patient in supine position. Additional scans in the lateral decubitus and prone positions were necessary and useful in some situations, especially in obese patients or patients with skeletal deformations. (12) The area of interest in the abdomen were completely evaluated in at least two scanning planes. Surveys were used to set correct imaging techniques, to rule out pathologies, and to recognize any normal variants. (6) The researcher used Shimadzu SDU- 350XL (Japan) ultrasound machine with multi-frequency curvilinear probe (3.5 – 5 MHz) which has variable focal zone and frequency capability, and KIAXIN (China) with two probes curvilinear multi-frequency (2 MHz – 5 MHz) and linear high frequency 6.5 MHz probe. The data have been analyzed by SPSS by using the various statistic computerize methods and presented in dummy tables and figures . Especial consideration was given to the right confidentially and anonymity of all research participants. Anonymity was achieved by using numbers for each research participant that would provide link between the information collected and the participants. In addition confidentiality was ensured by making the collected data accessible only to the researchers and the consultant radiologist.

Results
Table (1): Frequency distribution of patients according to gender

Gender	No.	%
Male	109	54.50%
Female	91	45.50%
Total	200	100%

Table (2): Frequency distribution of patients according to age

Age group (years)	No.	%
Less than 30	54	27.0%
31-40	72	36.0%
41-50	62	31.0%
Above 50	12	6.0%
Total	200	100%

Table (3): Frequency distribution of patients according to marital status

Status	No.	%
Married	144	72.0%
Single	52	26.0%
Divorced	4	2.0%
Total	200	100%

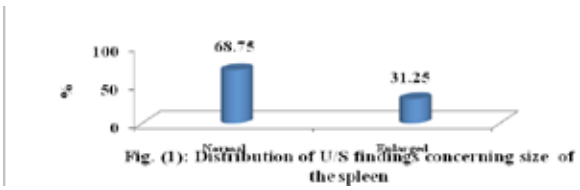

Fig. (1): Distribution of U/S findings concerning size of the spleen

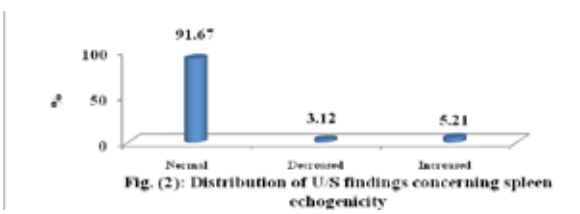

Fig. (2): Distribution of U/S findings concerning spleen echogenicity

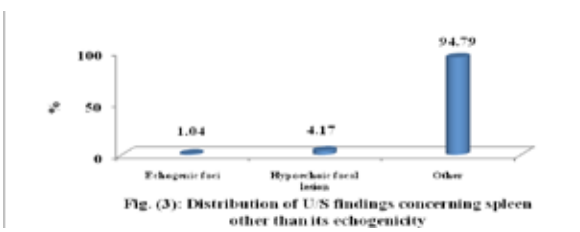

Fig. (3): Distribution of U/S findings concerning spleen other than its echogenicity

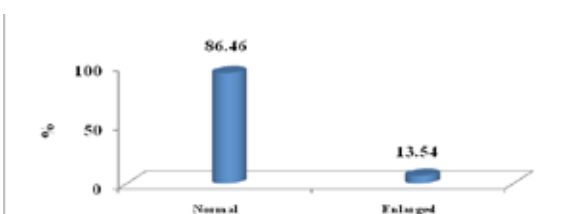

Fig. (4): Distribution of U/S findings concerning lymphnodes

Discussion

Out of the 200 cases, 109 patients were male (Table 1) forming the incidence of (54.50%). This show slight difference with (1) (Millicent Obajami et al, 2008) who studied abdominal ultrasonography in HIV/AIDS patients in southern Nigeria, O Obajami found that (66.5 %) were females and (33.5%) were males, and this difference may be due to the tradition state of our community and how people are dealing with AIDS patient. Out of two hundred patients their ages between 3 and 70 years (table 2), AIDS was most prevalent in the 4th decade or the most effected age group was between 31 and 40 years, and this forms incidence of about 36 %, this matches the findings of (1)

Volume : 4 | Issue : 12 | Dec 2014 | ISSN - 2249-555X

(Millicent O Obajimi et al, 2008) who studied abdominal Ultrasonography in HIV/AIDS patients in southwestern Nigeria and reported that the prevalence of the disease was in the 4th decade, and this may due increased sexual activity in the 3rd and 4th decade of age which is the most common cause of HIV transmission. The majority of patients were married (72 %) (table 3). This is reasonable because women receive the infection from their husbands after marriage. The result matches with (13) (Ala Mohammed, 2007), ultrasound findings of the liver in AIDS patients among Sudanese population , He found that (84%) of his patients were married.

Splenomegaly was demonstrated in 30 (31.25%) of the patients figure (1). Other abnormalities of the spleen in our study occurred far less common. The four cases of focal hypoechoic splenic areas may have been due to splenic lymphoma and small abscesses. Focal splenic lymphomas are commonly depicted as a hypoechoic lesion and are often seen in association with splenomegaly as in the cases identified. There was one case of echogenic foci may be due to splenic calcification figure (2, 3). There were 3 (3.12%) hypoechoic splenic parenchyma, and 5 (5.21%) cases of increased echogenicity of splenic parenchyma. These cases of splenic hyperechogenicity could not be attributed to any particular disease entity. The frequency of splenomegaly is compared with that recorded by (14) (Tshibwabwa, 2000) in which (35%) of their patients had splenomegaly and this agrees with our recorded. Other recorded by Millicent O Objimi et al (2008) (1) indentified splenomegaly in (45%) of his patients. Splenomegaly without focal lesion is relatively common in the tropics and can have myriads of causes including malaria, septicaemia, typhoid, schistosomiasis, portal hypertension, haemolytic anaemia and tropical splenomegaly (Blessing Ose-Emenim Igbinedion, 2009) (15).

Lymphadenopathy was diagnosed in 13 patients (13.54%) in this study figure (4), these enlarged lymph nodes were seen as multiple and were greater than 1 cm, mostly oval shaped with an echogenic hilum and a narrow symmetric cortex suggesting that they were benign. An ultrasound guided fine needle aspiration could have further characterized these nodes, but this could not be carried out in our centre because of unavailability of appropriate needles and other facilities. This record disagrees with Langer R. et al (1989) (16) who study abdominal sonographic findings in patients with AIDS, and he found that lymphadenopathy was (21%), and differentiation may be due to his small sample volume. N'Zi Pk et al (1999) (17) recorded that lymphadenopathy was (17.2%), and this approximately agrees with our study.

Conclusion

Ultrasound is a versatile tool for evaluating abdominal organs patients affected by AIDS. The sonographic findings in AIDS patients in Sudan are comparable to that from other African countries. However, provision and availability of sufficient clinic-pathologic data in the future would improve the quality of ultrasonographic diagnosis and treatment in these patients.

Our data supports the fact that manifestations and changes seen on abdominal ultrasound of AIDS patients appear to be uniform across African countries and others. However a wide range of features seen in AIDS patients which in the absence of histological confirmation makes the clinical usefulness of ultrasound quite limited. High resolution ultrasound machines with experienced radiologist or sonographer may be able to provide a narrow range of diagnostic possibilities that would enhance patient management and care in Sudan and where the burden of AIDS remains astonishingly high.

A wide range of abnormal abdominal organs can be seen on Ultrasonography in patients with AIDS. The most frequent findings, splenomegaly, enlarged lymph nodes, hepatomegaly and increased liver echogenicity occurring most commonly. Focal lesions of parenchymal of the organs, nephromegaly, ascites, portal hypertension and abscesses are uncommon findings.

Recommendations

Abdominal ultrasound scan is one such tool, I recommend to use it in this follow up and detection of secondary opportunistic infection. The relatively high incidence of abnormal abdominal ultrasound findings in AIDS patients support the need for ultrasound screening to assess AIDS patients in each centre. Because this was the first research done for abdominal ultrasound findings in AIDS patients in Sudan, there should be more concentration on using ultrasound as a useful diagnostic tool of research in AIDS patients' centers for more details, findings, and highlighting hidden information. There should be well equiped centres for management and follow up AIDS patients.

Fig (5) longitudinal sonogram of the spleen of 32 years old male patient, show multiple hypoechoic focal lesion.

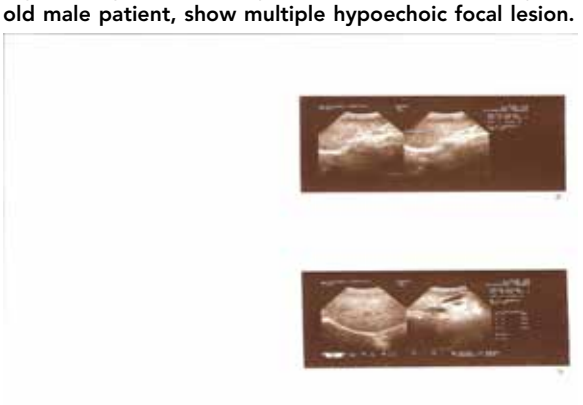

Fig (6) longitudinal sonogram of the spleen of 35 years old male patient, show splenomegaly.

Volume : 4 | Issue : 12 | Dec 2014 | ISSN - 2249-555X

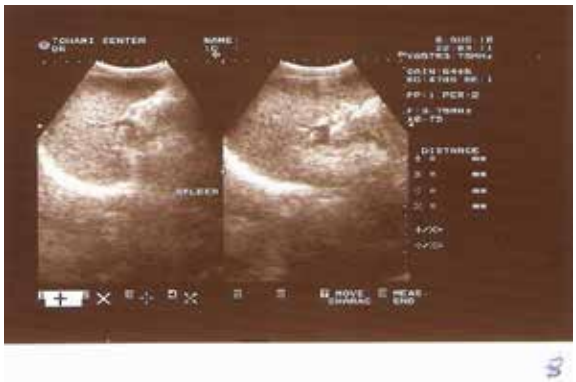

Fig (7) longitudinal sonogram of the spleen of 21 years old male patients show splenomegaly with heterogeneous echotexture.

Fig (8) gray scale sonogram of 25 years old female patient show enlarged lymph nodes.

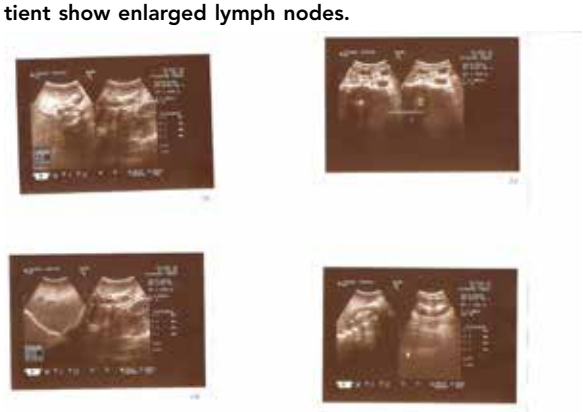

Fig (9) gray scale sonogram of 25 years old female patient show enlarged mesenteric lymph nodes.

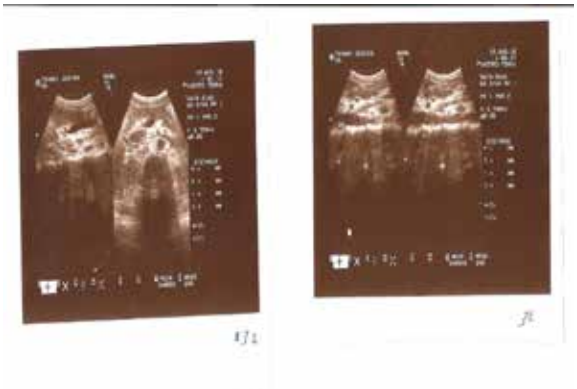

Fig (10) sagittal sonogram of 35 years male patient show enlarged paraortic lymph nodes.

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