# HEPATIC CYSTS: A REVIEW OF 219 CASES DIAGNOSED BY ULTRASONOGRAPHY IN ENUGU, SOUTH EASTERN NIGERIA.

*** Samuel O. Mgbor , ** Sylvester Chuks Nwokediuko, *Augustine C. Onuh**
*Dept of Radiation Medicine
University of Nigeria Teaching Hospital, Enugu, Nigeria.
**Dept of Medicine
University of Nigeria Teaching Hospital
Enugu, Nigeria
**Corresponding Author:**
Dr. Samuel O. Mgbor

## ABSTRACT

Cystic lesions of the liver are being increasingly diagnosed because of improved methods and wider availability of liver imaging techniques. There is considerable confusion in the classification and management of such cysts. This study is an attempt to characterise liver cysts seen at hepatic ultrasonography.

A retrospective analysis of all simple cysts of the liver diagnosed by ultrsonography at Hansa Medical Diagnostic Centre, Enugu, Nigeria during a 4-year period (2000-2003) was carried out. Information extracted from the records of patients included age, sex, clinical presentation, number and distribution of liver cysts, cysts in other organs and associated laboratory findings.

Out of 21, 731 scans of the abdomen and pelvis carried out during the period, 219 (1.0%) had liver cysts. There were 82 males (37.4%) and 137 females (62.6%). Their ages ranged from 4 years to 78 years (mean = 53.23 $\pm$ 15.77 years). One hundred and twenty three patients (56.16%) had multiple cysts and 96 patients (43.84%) had solitary cysts. There were associated renal cysts in 24 patients (10.96%). The right lobe of the liver was involved either exclusively or in combination with the left lobe in 195 patients (89.04%). Liver function abnormalities were rare.

Liver cysts are common in Nigeria and may present serious problems of management to the clinician. Their characteristics are to some extent different from what have been reported in the developed world.

## INTRODUCTION

Cystic lesions of the liver are not new in medical literature. In the era prior to the advent of ultrasonography and computerised tomography (CT) scans it was difficult to make a preoperative or antemortem diagnosis of the cystic nature of such lesions even when radioisotope scans and arteriography were used. Today these lesions are being increasingly diagnosed because of improved methods of imaging the liver and wider availability of these imaging techniques.

Ultrasonography is relatively sensitive (1, 2) and widely available even in the developing countries like Nigeria and therefore it is a useful tool in hepatic imaging. Liver cysts when identified at ultrasonography provoke consideration of a number of differential diagnoses. These include congenital cysts which may be solitary or multiple. Multiple cysts may arise in the setting of congenital polycystic liver disease. The cysts may also be traumatic, post inflammatory or neoplastic. Abscesses and neoplastic lesions may appear cystic at ultrasonography but it is usually possible to diagnose such conditions on the basis of the clinical picture and laboratory findings. Simple liver cysts appear as sonolucent, nonseptate and rounded masses with thin, smooth wall. The contents are echo free and the surrounding liver tissue appears sonographically normal.

Inspite of the aforementioned improvements in diagnosis there still exists considerable confusion associated with the classification of liver cysts. Even more challenging to the clinician is the problem of reaching correct aetiologic diagnosis and optimal management especially in the less-technologically advanced countries like Nigeria.

In this retrospective study all such liver cysts diagnosed at Hansa Medical Diagnostic

Centre, Enugu, Nigeria during a 4-year period have been analysed. This centre performs an average of 600 abdominal scans in a month and a good number of the patients are referred from neighbouring states like Anambra, Ebonyi, Abia, Rivers, Cross River, Akwa Ibom, Delta, Benue, Kogi and even beyond. Information obtained from this analysis will be a guide to further prospective studies on this subject.

## PATIENTS AND METHODS

For purposes of record keeping and retrieval of information patients referred to Hansa Medical Diagnostic Centre were assigned identification numbers which appeared on every investigation result. Every patient who had ultrasonography was first assessed by a doctor who obtained medical history and conducted physical examination on him before the scan.

All patients in whom simple liver cysts were diagnosed at ultrasonography between January 2000 and December 2003 had their records reviewed. Data extracted and analysed included age, sex, clinical presentation, number and distribution of cysts, associated cysts in other organs and results of other laboratory investigations where available. The result were expressed as percentages, means and standard deviation.

## RESULTS

Out of 21,731 abdomino-pelvic scans carried out in this centre during the 4-year period, 219 (1.0%) had liver cysts. This consisted of 82 males (37.4%) and 137 females (62.6%). Their ages ranged from 4 years to 78 years (mean = 53.23 $\pm$ 15.77 years). Ninety six patients (43.84%) had solitary cysts (figure 2) whereas 123 (56.16%) had multiple cysts (figure 3). Twenty four patients (10.96%) had associated renal cyst. Out of these, 8 had solitary liver cysts whereas 16 had multiple liver cysts, therefore, 8 out of 96 patients with solitary cysts had associated renal cysts (8%) whereas 16 out of 123 patients with multiple cysts had associated renal cysts (11%). There were 11 patients in whom cysts were present in the spleen, pancreas, and ovaries in different combinations (5.02%). Exclusive involvement of the right lobe of the liver was demonstrated in 108 patients (49.31%) whereas the left lobe was exclusively involved in 24 patients (10.96%) Bilobar involvement was seen in 87 patients (39.73%). In 174 patients (79.45%) the cysts were diagnosed during investigation for symptoms referable to the upper gastrointestinal and hepatobiliary system whereas in 45 patients (20.55%) the diagnosis was made either during investigation for an unrelated complaint or routine medical examination. In the 174 patients who were symptomatic, 99 (45.21%) presented with chronic upper abdominal pain, 36 (16.44%) had acute abdominal pain reminiscent of rupture into the peritoneal cavity, intracystic haemorrhage, torsion of the cyst or secondary infection. Abdominal mass and or abdominal distension was complained of by 24 patients (10.95%). Other clinical features were pruritus, which occurred in 15 patients (6.85%), flatulence in 11 patients (5.02%), weight loss in 6 patients (2.74%), hepatomegaly in 45 patients (20.55%), jaundice in 11 patients (5.02%), pedal edema in 9 patients (4.11%) and splenomegaly in 7 patients (3.21%).

Some patients had other evaluable laboratory findings. In 142 patients who had results of liver function tests, 7 (4.9%) had elevated total serum bilirubin, 5 (3.5%) had conjugated hyperbilirubinaemia, and 8 patients (5.6%) had elevated serum alkaline phosphatase. No patients had elevated transaminase level. Serum albumin was estimated in 136 patients, out of which 4 (2.9%) had hypoalbuminaemia. Prothombin time was prolonged in 3 out of 130 patients (2.3%). Serum Hepatitis B surface antigen ($HB_sAg$) was present in 13 out of 150 patients (8.67%).

## DISCUSSION

There is a dearth of published work on the magnitude of the problem of liver cysts in Nigeria and most developing countries. However, in places where studies have been carried out it is said to affect up to 5% of the population (3), being more common in the older age group. In this review, out of 21,731 abdominopelvic scans carried out during the period, 219 (1.0%) had liver cysts. This figure appears small but may present serious challenge to the clinician in hepatology practice. Furthermore, the incidence is likely to

be much higher than 1% in the general population, considering the well known fact that most people with liver cysts are asymptomatic and have normal liver function. It is only when the cysts grow to very large size that they cause symptoms of pressure and/or obstruction (4,5). Occasionally accidents to the cyst such as torsion, intracystic haemorrhage, rupture into the peritoneal cavity and infection may be the reason for clinical presentation.

Several studies indicate that females are affected more often than males (4, 6-8). In this study there is a female preponderance (ratio = 1.6 : 1) but this is not as striking as in the studies cited above in which the ratio is as high as 5:1. The reason for the narrowed sex difference maybe due to the fact that in those studies, only non-parasitic cysts were analysed regardless of their aetiopathogenesis.

The mean age of patients in this series is 53.23 $\pm$ 15.77 years with a peak age incidence in the 7$^{th}$ decade of life. This is a decade higher than what was observed in other studies (4,7). Again this may be related to the populations studied. This series probably includes cysts which are non-parasitic as well as those that are parasitic in aetiology.

The number and distribution of cysts in the liver may throw some light on the aetiology of such cysts. When the whole liver is riddled with cysts of various sizes polycystic liver disease is presumed to exist (9) and this entity is associated with autosomal dominant polycystic kidney disease in about 50% of cases (10). In this study the cysts were solitary in 96 patients (43.84%) and multiple in 123 patients (56.16%). Twenty four patients in all had associated renal cysts out of which 8 actually had solitary liver cysts. This confounds any attempt to classify the cysts on the basis of number as solitary liver cysts are also associated with renal cysts. The overall low association with renal cysts sharply contrasts with the observation elsewhere (10) and this suggests that most hepatic cysts in Nigeria may not be congenital. This actually calls for more studies on liver cysts in Nigeria.

Solitary non-parasitic cysts of the liver tend to involve the right lobe more frequently than the left accounting for 47% and 75% of cases in two studies (4,7). In this review the right lobe haboured the cysts either exclusively or in combination with the left lobe in 89% of cases. This may be a reflection of the aetiology of such cysts. Substances absorbed from the small intestine (especially micro-organisms and toxins) tend to lodge preferentially in the right lobe of the liver because of the anatomic and haemodynamic characteristics of the portal circulation. This again calls for more studies on the aetiology of liver cysts in Nigeria.

Liver cysts are usually asymptomatic except specific complications occur or the cysts grow so big to cause pressure or obstructive symptoms. Most of the patients in this review (79.45%) had symptoms on presentation whereas 20.55% were asymptomatic. This is not surprising because it is a hospital based study. Since asymptomatic persons don't usually visit the hospital, it follows that there are many more people in the general population who have asymptomatic cysts. Chronic abdominal pain constituted the commonest presenting symptom in this series (45.21%). This is similar to the findings in some studies (1,2) but different from the experience of other investigators who documented abdominal distension as the commonest symptom (4, 5, 11). Acute abdominal pain was the presenting symptom in 36 patients (16.44%). This suggests that accident to liver cyst (torsion, rupture, intracystic bleeding, or infection) should always be considered in cases of acute abdomen of unclear aetiology.

Liver function abnormalities were rare as expected. Specifically no patient had elevated serum transaminases. Less than 5% had hyperbilirubinaemia which was mostly obstructive. Serum alkaline phosphatase was elevated in 5.6% of cases and that also reflects obstructive effect of the cysts. There is no association between the cysts and the common surrogate maker of Hepatitis B virus infection i.e Hepatitis B surface antigen (HBsAg). The prevalence of HBsAg in the patients studied (8.67%) is not higher that what obtains in the general population (12 14).

There is no effective medical treatment for liver cysts. Percutaneous aspiration appears to be a simple option but it is associated with a high recurrence rate (15). Percutaneous aspiration with introduction of slerosing agents has shown good results with a

definitely reduced recurrence rate (16, 17). Surgical treatment involves unroofing the cysts by excising the portion that extends to the surface of the liver. It is possible to do this through a labparoscope with satisfactory results (18). This approach may be very successful in solitary cysts but in patients with multiple cysts the surgical goal is to decompress as much of cystic liver as possible. This may be accomplished by a combination of unroofing and fenestration. In selected patients resection of the involved part of the liver may be a viable option. Liver transplantation is also an option in few situations but certainly not in an economically depressed country like Nigeria where modern medical equipment and consumables are hardly available and affordable.

**CONCLUSION**

Liver cysts may present serious problems of diagnosis and management to the clinician. The aetiology and characteristics of such cysts in Nigeria may be different from what has been published in other parts of the world. There is need for more studies on this subject so as to develop guidelines for its management.

**Table 1**

Age and Sex Distribution Of Patients With Liver Cysts.

| AGE | SEX | | |
|---|---|---|---|
| | **Male** | **Female** | **Total** |
| 0-9 | 1 | 2 | 3 |
| 10-19 | 2 | 4 | 6 |
| 20-29 | 2 | 4 | 6 |
| 30-39 | 11 | 13 | 24 |
| 40-49 | 16 | 28 | 44 |
| 50-59 | 18 | 28 | 46 |
| 60-69 | 20 | 39 | 59 |
| 70-79 | 12 | 19 | 31 |
| **Total** | **82** | **137** | **219** |

Mean Age = 53.23 years

SD = 15.77 years.

**Fig. 1**
**Age and Sex Distribution of Patients with Hepatic Cysts**

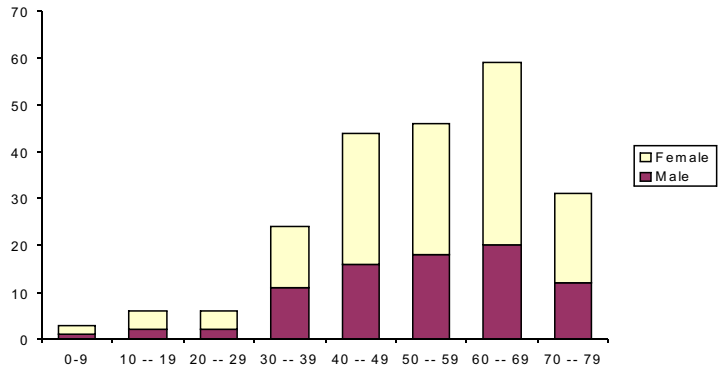


Table 2
**Characteristics of Liver Cysts in 219 Patients**

| Characteristic | Number of Patients | Percentages (%) |
|---|---|---|
| Solitary | 96 | 43.84 |
| Multiple | 123 | 56.16 |
| Exclusive Right lobe involvement | 108 | 49.31 |
| Exclusive left lobe involvement | 24 | 10.96 |
| Bilobar Involvement | 87 | 39.73 |
| Associated Renal cyst | 24 | 10.96 |
| Cysts in other organs (spleen, Paancreas,Ovaries) | 11 | 5.02 |

Table 3
**Clinical Presentation of 219 Patients with Liver cysts**

| Clinical Feature | Number of Patients | Percentage (%) |
|---|---|---|
| Asymptomatic/ Incidental Finding | 45 | 20.55 |
| Chronic Abdominal pain | 99 | 45.21 |
| Acute Abdomen | 36 | 16.44 |
| Abdominal mass/Distension | 24 | 10.96 |
| Pruritus | 15 | 6.85 |
| Flatulence | 11 | 5.02 |
| Weight loss | 6 | 2.74 |
| Hepatomegaly | 45 | 20.55 |
| Jaundice | 11 | 5.02 |
| Pedal Edema | 9 | 4.11 |
| Splenomegaly | 7 | 3.21 |

**Table 4**

**Some Laboratory Parameters in patients with Hepatic Cysts**

| Parameter | Number of Patients With abnormal values | Percentage (%) |
|---|---|---|
| Total Bilirubin (n = 142) | 7↑ | 4.9↑ |
| Conjugated Bilirubin (n = 142) | 5↑ | 3.5↑ |
| Alkaline phosphatase (n = 142) | 8↑ | 5.6↑ |
| AST (n = 142) | - | - |
| ALT (n = 142) | - | - |
| Serum Albumin (n = 136) | 4↑ | 2.9↓ |
| Prothrombin time (n = 130) | | |
| ≥ 3 seconds prolonged | 3 | 2.3 |
| HBs Ag Positive (n = 150) | 13 | 8.67 |

**Fig. 2: LAREG SOLITARY LIVER CYSTS**


**FIG 3: MULTIPLE LIVER CYSTS**


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