Original Research Article

Evaluation of cystic lesions of liver by ultrasonography

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Abstract

Background: Ultrasonography is very sensitive in detecting cystic lesions of liver, which helps in detecting various lesions, along with the internal structures of the body. One gets an opportunity to evaluate additional information of other abdominal organs that can modify the course of treatment and prognosis of patient.

Aim: To evaluate the demographic variables, symptomatology ultrasonographic features and the diagnostic Accuracy, with the help of ultrasonography, in evaluating cystic lesions of liver.

Materials and Methods: The study comprised of 50 patients with the clinical symptoms of cystic lesions of liver. They were evaluated with ultrasonography of abdomen where cystic lesions of liver were taken, who needed follow up and interventional procedure. The study was an observational, descriptive hospital based study.

Results: 50 patients were evaluated, which comprised equal number of male and female (50%), due to various harmful habits where the Patients had presented with pain and swelling in right hypochondrium. Proper diagnosis cystic lesion of liver was evaluated by ultrasonography for further management.

Conclusion: Ultrasound by virtue of non-invasiveness, lack of radiation hazard and by ability to demonstrate structural changes in organ is investigation of choice in liver pathology and it can easily detect solid to cystic lesions and characterize the size, shape and extent of lesion.

Key words

Liver abscess, Liver cyst, Hepatocellular cyst, USG.

Introduction

Liver plays an essential role in metabolism of Amino Acids, Carbohydrates, Lipids and synthesis of Proteins. Basic Pathophysiology of cystic lesions of liver usually represents failure in one of these metabolic pathways [1]. The diagnosis of these lesions rests on Physical Examination, Laboratory Investigations and Newer imaging techniques. Radiological technique like Ultrasonography has a role in evaluation of liver diseases [2].

Ultrasonography is sensitive in detecting liver lesions [3]. It plays an important role in evaluation of liver pathology and gives clue about internal structure and idea about extent and opportunity to evaluate other abdominal organs [4].

Co-relation of Ultrasonographic findings with clinical data, laboratory investigations can make definite and accurate diagnosis and help in appropriate management of patient [5]. It is non-invasive, cheap, easily available diagnostic tool [6].

The purpose of this study was to evaluate demographic variables, symptomatology ultrasonographic features and diagnostic accuracy with help of ultrasonography in evaluating cystic lesion of liver.

Materials and methods

Study area

The study was carried out in the Department of Radiodiagnosis, S.B.K.S. Medical Institute and Research Centre, Waghodia, Vadodara.

Study design

Type of the study: An Observational, Descriptive Hospital Based Study.

Sample size: 50 patients.

Selection of subject

Inclusion criteria

- Only those patients who were willing to participate in study were included.
- Patients referred to the Radiodiagnosis Department for Ultrasonography of Abdomen and found to have liver cystic lesions were included in the study.
- Diagnosed cases of cystic lesions of liver, who need follow up and interventional procedure, were included in the study.

Exclusion criteria

- Patients presenting to Radiodiagnosis department having other Pathologies in the liver were excluded from the study.

Study tools

Ultrasonography machine of GE –LOGIQ P5/LOGIQ P9 with multi-frequency abdominal probs and Color Doppler analysis were obtained using Philips envisorHD7, HD9 with a 3.5/5-MHz curvilinear array.

Study protocol

50 Patients were evaluated, which comprised equal number of Male and female. Where the Patients had presented with pain and selling in right hypochondrium. Proper diagnosis Cystic lesion of Liver was evaluated by Ultrasonography.

The following cystic lesion were observed

- Simple Liver Cysts (**Figure - 1**)
- Polycystic disease of liver (**Figure - 2**)
- Hydatid Cyst (**Figure - 3**)
- Hepatocellular Carcinoma (**Figure – 4**)
- Liver Metastasis (**Figure - 5**)

Figure – 1: Simple Liver Cysts.

Figure – 2: Polycystic disease of liver.

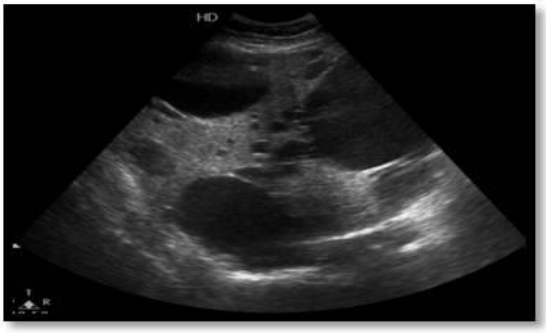

Figure – 3: Hydatid Cyst.

Figure – 4: Hepatocellular Carcinoma.

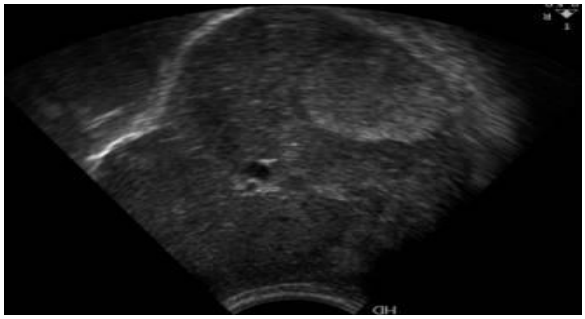

Figure – 5: Liver Metastasis.

Results

A total 50 patients were examined and comparison done with operative and Histopathological diagnosis. The salient observations were as follows.

Age distribution

Maximum numbers of patients were in age group 41 – 50 years (17.0%) minimum numbers of patients were in age group 61 – 70 years (0.70%). (**Table – 1, Figure - 6**)

Figure - 6: Age distribution.

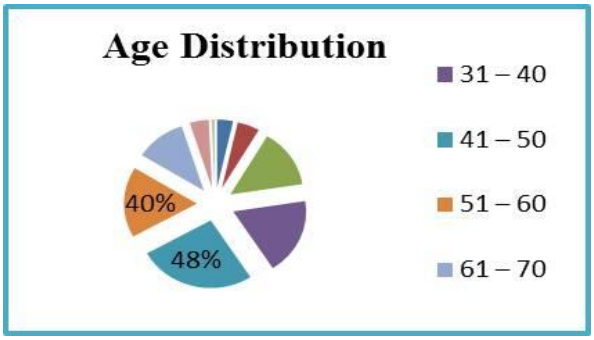

Table – 1: Age distribution.

Age group (Years)	No. of patients	%
31 – 40	05	10
41 – 50	24	48
51 – 60	20	40
61 – 70	1	2

Sex wise distribution

In the present study, male patients (50%) were more as compared to female patients (50%). (**Table – 2**)

Table – 2: Sex wise distribution.

Sex	No. of patients	%
Male	25	50
Female	25	50

Lobe wise distribution

In focal liver pathology evaluation right lobe more commonly involved accounting for (40%) compared to left lobe both (20%) and both lobe involved in (40%) of cases. (**Table – 3**)

Clinical presentation

Pain in the right hypochondrium and abdominal distention was the most common presentation with (40%) of cases followed by Lump in abdomen with (20%) of patients. (**Table – 4**)

Table – 3: Lobe wise distribution.

Lobe involvement	No. of patients	%
Right	20	40
Left	10	20
Both	20	40

Table – 4: Clinical presentation.

Symptoms	No. of Patients	%
Pain in Right hypochondrium	20	40
Lump in abdomen	10	20
Abdominal distention	20	40

Incidence based on echo pattern

Hypo echoic lesions were most common with (50%) of patients to be followed by mix echogenic lesion with (20%) of patients. The patients to be Echogeni were (30%). (**Table – 5**)

Table – 5: Incidence based on Echo pattern.

Echo pattern	No. of patients	%
Hypoechoic	25	50
Echogenic	15	30
Mix Echogenic	10	20

Incidence based on benign and malignant lesions

Benign lesions were more common than malignant lesions. Benign lesions were found 80 % and malignant lesions were found 20% of the total patients. (**Table – 6**)

Table – 6: Incidence based on Benign and Malignant Lesions.

Type of lesions	No of patients	%
Benign	40	80
Malignant	10	20
Total	50	100

Comprehensive analysis of focal liver lesions

Hydatid cyst of liver was more common (36%) (**Table – 7**)

Table – 7: Comprehensive analysis of focal liver lesions.

Nature of lesion	No. of patients	%
Simple liver cyst	5	10
Polycystic disease of liver	6	12
Hydatid cyst of liver	18	36
Hepatocellular carcinoma	10	20
Liver metastases	11	22

Discussion

In the present study 50 cases of liver cyst were studied by using Ultrasonography.

Comparative study for age distribution

In one study, maximum numbers of patients were in (51-60 years) age group [3]. In the present study maximum numbers of patients were in (41-50 years) age group. Above comparative study shows that liver pathologies are more common in middle age as compared to pediatrics and old age.

Comparative study for sex distribution

In one series male: female was 1.5:1 [3]. In another series male: female ratio was 4:1 [4], while in present study male: female ratio was 1:1.

Comparative study for lobe distribution

In one study, right lobe was most commonly affected to be followed left lobe [5], while in other studies [4, 6] and present study right lobe is most commonly affected followed by both lobes and left lobe involvement was least common. One possible reason for right lobe predominance could be large surface area and greater blood supply to right than left lobe.

Comparative study for analysis of focal liver lesions

In present study, the predominance of Hydatid cyst of liver (36%) followed by liver metastases (22%). The least common lesions were simple liver cyst.

Comparative study for incidence of benign and malignant lesions

From above comparison it is evident that benign (80%) are more common as compare to malignant lesion (20%).

Conclusion

Ultrasound by virtue of non-invasiveness, lack of radiation hazard and by ability to demonstrate structural changes in organ is investigation of choice in liver pathology. It can easily detect solid to cystic lesions and characterize the size, shape and extent of lesion. But finally, ultrasound has its own merits and demerits. Ultrasound is non-hazardous, non-invasive, radiation free, can be quickly performed and is relatively cheaper, so it is first line of imaging modality.

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