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## Original Research

### Usefulness of USG in detection of hepatic lesions- A clinical study

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#### ABSTRACT

**Background:** Ultrasound is easily accessible and does not expose patients to ionizing radiation. The study was done to assess the sensitivity and specificity of USG in determination of hepatic masses. **Materials & Methods:** The present study was conducted on 60 patients. USG of all patients was done on ESAOTE Gold machine. For ultrasound transducers 3.5-5 MHz frequency was used after applying jelly as a coupling agent for proper contact between the probe and the skin surface. **Results:** Out of 60 patients, males were 35 and females were 25. Liver abscess was seen in 12 males and 6 females, hepatic cysts in 5 males and 5 females, HCC in 3 males and 2 females, liver masses in 8 males and 7 females and amoebic abscess in 7 males and 5 females. The difference was non-significant ( $P > 0.05$ ). 1 case of liver abscess, 1 cases of hepatic cyst, 2 cases of HCC, 2 cases of liver abscesses USG lack diagnosis. USG (100%) had highest sensitivity & specificity in amoebic abscess (100%). **Conclusion:** Hepatic lesions are quite common. USG may be useful in initial diagnosis of cases. It has high sensitivity and specificity.

**Key words:** Liver, Sensitivity, Ultrasound

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#### INTRODUCTION

Liver masses present with fever, pain, abdominal discomfort, or accidentally without overt symptomatology. Liver masses may be benign, malignant or metastatic in origin. Commonly encountered benign lesions include pyogenic liver abscess, focal nodular hyperplasia, simple cyst, hydatid cyst and hemangioma. Malignant lesion includes hepatocellular carcinoma, intrahepatic cholangiocarcinoma.<sup>1</sup> Metastatic lesions include secondaries from colon, lung, breast, stomach, pancreas, prostate etc. Classically, the cancer of the biliary tract was separated into three categories ie cancer of the intrahepatic biliary tract, cancer of gall bladder and bile duct and cancer of ampulla of vaters. It includes gall bladder carcinoma, cholangiocarcinoma, periampullary carcinoma and metastasis.<sup>2</sup> The investigation of hepatic masses includes clinical examination, plain x-ray abdomen, biochemical analysis, ultrasound, computed tomography. Apart from this, magnetic resonance imaging, positron emission tomography, endoscopic retrograde cholangiopancreatography, percutaneous transhepatic cholangiography, magnetic resonance cholangiopancreatography and cholangio computed tomography may be performed.<sup>3</sup> Hepatic masses are best diagnosed with plain abdominal x-ray which is of low cost and readily available. However, it is contraindicated in

pregnancy. Pathognomic findings are calcified gallstones, limey bile, porcelain gallbladder, emphysematous cholecystitis and gallstone ileus.<sup>4</sup> Ultrasound examination of the gallbladder is accepted as the primary imaging modality in the assessment of gallbladder disease, with inherent superiority in comparison to other imaging modalities. Ultrasound is easily accessible and does not expose patients to ionizing radiation.<sup>5</sup> The study was done to assess the sensitivity and specificity of USG in determination of hepatic masses.

#### MATERIALS & METHODS

The present study was conducted in the department of Radio diagnosis. It comprised of 60 patients presenting with clinical history of fever, pain and abdominal discomfort. All were informed regarding the study and written consent was obtained. Ethical clearance was obtained prior to the study. General information such name, age, gender etc. was recorded. In all, biochemical analysis was done. USG of all patients was done on ESAOTE Gold machine. For ultrasound transducers 3.5-5 MHz frequency was used after applying jelly as a coupling agent for proper contact between the probe and the skin surface. Ultrasound evaluation was done in detail for site of origin of mass, its nature

whether solid or cystic, echotexture and echogenecity. P value less than 0.05 was considered significant.

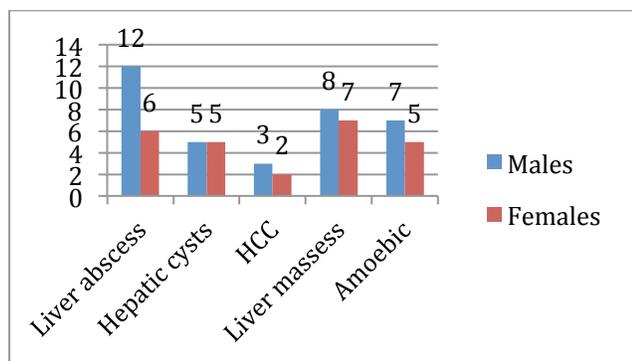
**RESULTS**

Table I shows that out of 60 patients, males were 35 and females were 25. The difference was non- significant (P- 0.1).

**Table I Distribution of patients**

Total- 60		
Males	Females	P value
35	25	0.1

**Graph I Type of hepatic lesions**



Graph I shows that liver abscess was seen in 12 males and 6 females, hepatic cysts in 5 males and 5 females, HCC in 3 males and 2 females, liver masses in 8 males and 7 females and amoebic abscess in 7 males and 5 females. The difference was non-significant (P> 0.05).

**Table II Final diagnosis and efficacy of USG**

Lesions	USG	Final diagnosis	P value
Liver abscess	17	18	0.1
Hepatic cysts	9	10	
HCC	3	5	
Liver masses	13	15	
Amoebic abscess	12	12	

Table II shows that in 1 case of liver abscess, 1 cases of hepatic cyst, 2 cases of HCC, 2cases of liver abscesses USG lack diagnosis. The difference was non- significant (P- 0.1).

**Table III Sensitivity and specificity of USG**

Lesions	Sensitivity	Specificity
Liver abscess	94.4%	97.2%
Hepatic cysts	90%	88.4%
HCC	60%	75.4%
Liver masses	86.7%	90.6%

<b>Amoebic abscess</b>	100%	100%
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Table III shows that USG (100%) had highest sensitivity & specificity in amoebic abscess (100%).

**DISCUSSION**

Focal liver lesions are defined as solid or liquid-containing masses foreign to the normal anatomy of the liver that may be told apart from the latter organ using imaging techniques(1). They may be benign, malignant or metastatic in origin. The commonest malignant primary hepatic neoplasm is hepatocellular carcinoma (HCC). Other malignant hepatic neoplastic lesions like secondaries and the less frequently encountered hepatoblastoma and sarcomas are not easily differentiated from hepatocellular carcinoma by the available imaging modalities and the final diagnosis is established by histopathology.<sup>6</sup> Unenhanced ultrasonography has excellent spatial and contrast resolution and may therefore provide useful information regarding the liver and liver masses without the use of contrast agents. Liver cysts can be identified and confidently diagnosed and a variety of appearances of solid masses may suggest a specific diagnosis. Hypoechoichalo or rim surrounding an echogenic or isoechoic liver mass is suggestive of probable malignancy. Multiple hypoechoic masses in the liver most often suggest metastases.<sup>7</sup> We found that liver abscess was seen in 12 males and 6 females, hepatic cysts in 5 males and 5 females, HCC in 3 males and 2 females, liver masses in 8 males and 7 females and amoebic abscess in 7 males and 5 females. This is similar to Sahani et al.<sup>8</sup> Hilendarove et al<sup>9</sup> conducted a study in which a total of 123 lesions (70.28%) were located in the right lobe of the liver, and 52 lesions (29.71%) were located in the left lobe. All of these invasive manipulations of focal liver lesions the US or CT control was sufficient for the exact penetration to the region of interest, proper location of the top of the needle and obtaining material for cytological and pathologic examination. One hundred and twenty three lesions (70.28%) were located in the right lobe of the liver, and 52 lesions (29.71%) were located in the left lobe. Among right lobe lesions, 49 (39.83%) were located in the superior portions of segments VII and VIII (subdiaphragmatic), 74(60.16%) in the V and VI segments. 25 (48.07%) of the left lobe lesions were located in the upper subdiaphragmatic area of segment IVa or II. There was no relationship between the lesion's anatomic position in the liver and the diagnostic accuracy of the specimen or the number of passes needed. We observed that 1 case of liver abscess, 1 cases of hepatic cyst, 2 cases of HCC, 2cases of liver abscesses USG lack diagnosis. USG (100%) had highest sensitivity & specificity in amoebic abscess (100%). Kinkel et al<sup>10</sup> studied approximately 233 focal liver lesions with 120 lesions being true benign and 113 lesions being true malignant. Sensitivity (%) of diagnosing benign lesions on USG was 94.44% and on CT was 97.43%, for malignant lesions it was 89% and 97% respectively. Specificity (%) of diagnosing benign lesions on USG was 98.45% and on CT was 100%, for malignant lesions it was 94.65 and 98.51% respectively.

**CONCLUSION**

Hepatic lesions are quite common. USG may be useful in initial diagnosis of cases. It has hih sensitivity and specificity.

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