

Original article:

A study of correlation of USG findings of liver mass lesions with Histopathological diagnosis

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Abstract:

Introduction: In this study histopathology is considered gold standard for diagnosis except for haemangioma and hydatid cyst for which CT/MRI scan is done.

Materials and methods: The present study consisted of 50 patients referred by physicians and surgeons from OPD and IPD for USG evaluation of the suspected liver pathology. Majority of the patients were referred to our Department with clinical suspicion of a liver mass lesion. Though in some patients intrahepatic mass lesions which were found incidentally are also included in our study and then the findings were correlated with histo-pathology findings obtained from Biopsy/FNAC where ever possible.

Results: In our study we diagnosed 15 cases of abscess of which 14 turned out to be true positive and 1 was false positive while 34 were true negative and 1 false negative.

So the Chi square value is 40.3 and $p < 0.0001$ which proves to be significant correlation with Positive predictive value – 93.3% . In our study we diagnosed 12 cases of metastasis of which 11 turned out to be true positive and 1 was false positive while 37 were true negative and 1 false negative.

Conclusion: Thus, ultrasound offers a cheapest,safe, sensitive, and easily available imaging modality for the diagnosis and follow-up of various liver mass lesions and should be the first line of investigation in suspected cases.

Introduction:

Diagnosis and characterization of liver masses require a distinct approach for each group of conditions, using the available procedures discussed above for each of them. The correlation with the medical history, the patient's clinical and functional (biochemical and hematological) status are important elements that should also be considered.¹ The limitless multiplanar scanning to delineate boundaries between contiguous viscera and the real time capabilities remain important advantages of Ultrasound. With this background, this study is being carried out to establish the efficacy of US in diagnosis and evaluation of liver masses with respect to cost, pick up rate, availability, sensitivity and specificity by comparing it with histopathological diagnosis.²

In this study histopathology is considered gold standard for diagnosis except for haemangioma and hydatid cyst for which CT/MRI scan is done.

Material and methods:

The present study consisted of 50 patients referred by physicians and surgeons from OPD and IPD for USG evaluation of the suspected liver pathology. Majority of the patients were referred to our

Department with clinical suspicion of a liver mass lesion. Though in some patients intrahepatic mass lesions which were found incidentally are also included in our study and then the findings were correlated with histo-pathology findings obtained from Biopsy/FNAC where ever possible.

Inclusion criteria:

- Clinical history/physical examination suggestive of a lump in right hypochondriac region/lump in abdomen.
- If a liver mass incidentally gets detected on routine abdominal USG.

Exclusion criteria:

- All patients who do not consent to be a part of the study.
- Postoperative patients.
- Patients with bleeding disorders.

A thorough ultrasound examination of the liver was carried out. The liver was scanned in various planes like the sagittal, parasagittal, transverse, oblique, subcostal, intercostals, coronal etc.in all patients. Various observations of the space occupying lesions were made. **Biopsy/aspiration**

procedure:-

- USG guided liver biopsy is the most effective ,efficient and gold standard method to biopsy of the liver lesions.
- First it was started for liver by EHRlich.
- In 1951 Aspiration needle was used for the first time by Iverson and BUIRI.

Results:

SHOWING COMPARISION BETWEEN USG DIADNOSIS AND HISTOPATH/ CT DIAGNOSIS

SR. NO.	USG DIAGNOSIS	HISTOPATHOLOGICAL / CT DIAGNOSIS	SR. NO.	USG DIAGNOSIS	HISTOPATHOLOGICAL / CT DIAGNOSIS
1	ABSCESS	ABSCESS (AMOEBIC)	26	METS	LUNG CA (ADENOCARCINOMA)
2	METS	CA BREAST (MEDULLARY)	27	HCC	HCC
3	HCC	HCC	28	ABSCESS	ABSCESS (AMOEBIC)
4	ABSCESS	SIMPLE CYST	29	SIMPLE CYST	SIMPLE CYST
5	HYDATID CYST	HYDATID CYST	30	METS	CA BREAST (MEDULLARY)
6	ABSCESS	ABSCESS (PYOGENIC)	31	HCC	METS FROM CA HEAD OF PANCREAS.
7	HCC	HCC	32	HAEMANGIOMA	HAEMANGIOMA
8	ABSCESS	ABSCESS (AMOEBIC)	33	ABSCESS	ABSCESS (PYOGENIC)
9	METS	STOMACH CA	34	HAEMANGIOMA	HEPATIC ADENOMA

		(GIST)				
10	SIMPLE CYST	OLD	ABSCCESS	35	METS	C A RIGHT OVARY (GRANULOSA CELL TR.)
11	ABSCCESS	ABSCCESS (PYOGENIC)		36	ABSCCESS	ABSCCESS (AMOEBIC)
12	HAEMANGIOMA	HAEMANGIOMA		37	HCC	HCC
13	ABSCCESS	ABSCCESS (PYOGENIC)		38	HYDATID CYST	HYDATID CYST
14	METS	COLORECTAL CA (ADENOCARCINOMA)		39	ABSCCESS	ABSCCESS (AMOEBIC)
15	HCC	HCC		40	HCC	HCC
16	ABSCCESS	ABSCCESS (AMOEBIC)		41	METS	C A LEFT OVARY (PAPILLARY)
17	FNH	FNH		42	METS	COLORECTAL CA (ADENOCARCINOMA)
18	METS	CA BREAST (DUCTAL CA)		43	ABSCCESS	ABSCCESS (PYOGENIC)
19	SIMPLE CYST	SIMPLE CYST		44	HCC	HCC
20	ABSCCESS	ABSCCESS (PYOGENIC)		45	METS	COLORECTAL CA (ADENOCARCINOMA)
21	HCC	HCC		46	ABSCCESS	ABSCCESS (AMOEBIC)
22	HCC	HCC		47	HCC	HCC
23	ABSCCESS	ABSCCESS (AMOEBIC)		48	HAEMANGIOMA	HAEMANGIOMA
24	HAEMANGIOMA	HAEMANGIOMA		49	METS	LUNG CA (ADENOCARCINOMA)
25	METS	HCC		50	SIMPLE CYST	SIMPLE CYST

HISTOPATH DIAGNOSIS IS OBTAINED ON THE BASIS OF BIOPSY AND ASPIRATION CYTOLOGY DONE.

The correlation between USG diagnosis was tested considering histopath (HPR) diagnosis as gold standard and CT diagnosis gold standard for hydatid and hemangioma we have used chi square test.

CROSSTABULATION COUNT FOR ABSCESS.

		HPR		Total
		ABSCESS	NO ABSCESS	
USG	ABSCESS	14	1	15
	NO ABSCESS	1	34	35
Total		15	35	50

Discussion:

In our study we diagnosed 15 cases of abscess of which 14 turned out to be true positive and 1 was false positive while 34 were true negative and 1 false negative.

So the Chi square value is 40.3 and $p < 0.0001$ which proves to be significant correlation with Positive predictive value – 93.3% . In our study we diagnosed 12 cases of metastasis of which 11 turned out to be true positive and 1 was false positive while 37 were true negative and 1 false negative.

So the Chi square value is 39.2 and $p < 0.0001$ which proves to be significant correlation and concordance in diagnosis with Positive predictive value – 91.67%. In our study we diagnosed 11 cases of HCC of which 10 turned out to be true positive and 1 was false positive while 38 were true negative and 1 false negative.

So the Chi square value is 39.02 and $p < 0.001$ which proves to be significant correlation with Positive predictive value – 90.91%. In our study we diagnosed 5 cases of Hemangioma of which 4 turned out to be true positive and 1 was false positive while 45 were true negative and 0 false negative. So the Chi square value is 38.7 and $p < 0.001$ which proves to be significant correlation with Positive predictive value – 80% .

Overall concordance in the diagnosis of USG and HPR/FNAC/CT for liver masses was 90.4%.

This study, carried over a period of two years, included 50 cases with various mass lesions of the liver. Most of the patients had clinical features suggestive of an intrahepatic mass lesion. However few cases had no clinical features related to the focal lesions and were detected incidentally.

In this study it played a supportive and confirmatory role in characterizing the lesion especially in patients with liver metastasis, liver primary, abscess, FNH and simple cyst.

Lesions	Biopsy findings
Amoebic liver abscess	USG guided aspiration was done in all 15 cases of which 9 cases showed anchovy pus which was further proved to be amoebic in cytology.
Pyogenic liver abscess	USG guided aspiration was done in all 15 cases of which 6 cases showed thick pus with blood tinged with internal echos which was further proved to be pyogenic in cytology.
Simple cysts	USG guided puncture of all cysts were done and aspirated from which clear fluid was aspirated without any complications.
Metastasis	12 cases USG guided biopsy was done directly from the lesion.
HCC	10 cases USG guided biopsy and 1 FNAC was done which showed trabecular sheets of malignant hepatocytes with high nucleocytoplasmic ratio, prominent nucleoli and intranuclear inclusions,
FNH	USG guided biopsy was done directly from lesion which proved to be FNH.

Thus USG provides a diagnostic sensitivity of 90.9%, specificity of 97.4%, positive predictive value of 90.9% and accuracy of 96 % in hepatocellular carcinoma. Thus histopathology does stands to be the gold standard for confirmation of USG diagnosis. Ultrasound proved to be a cost efficient, safe, sensitive and easily available imaging modality for the diagnosis and follow-up of various focal liver lesions and should therefore be the first line of investigation in suspected cases.

Ultra sound is a safe and sensitive method of detecting liver mass lesions.^{3,4} Its flexibility and lack of dependence on organ function makes it almost ideal for imaging the liver. Even small lesions with suitable difference in reflectivity can be detected. The liver can be imaged in multiple planes ,thus enabling us to know the exact location of the lesion and studying their echopattern. Apart from detecting lesions, other valuable information like vessel involvement, ascites, lymphadenopathy, etc. can be easily obtained. In most instances a specific diagnosis can be made, either based on the ultrasound features alone or in correlation with the clinical features which was confirmed on histopathology.^{5,6,7}

Ultrasound is useful for guided percutaneous drainage of abscesses and for obtaining biopsies. It also has an important role in the follow up of the patient with focal liver lesions.

Conclusion:

Thus, ultrasound offers a cheapest, safe, sensitive, and easily available imaging modality for the diagnosis and follow-up of various liver mass lesions and should be the first line of investigation in suspected cases.

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