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Ultrasound Guided Fine Needle Aspiration of Liver Lesions: A One Year Prospective Study in Our Institute

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Abstract: *Introduction: Liver is one of the most common sites for both neoplastic and non-neoplastic lesions. Ultrasound guided FNA of liver is safe, cheap and relatively noninvasive procedure with minimum complications. Material and Methods: This study was a prospective cross sectional study over a period of one year from January 2018 to December 2018 with 50 cases and was conducted in the radiology and pathology departments of LN Medical College and JK Hospital, Bhopal. Results: Of the total 50 cases, 13 [26%] cases were Benign and 37 [74%] were malignant, or suspicious for malignancy. All the samples were satisfactory and had good diagnostic yield so there were no non-representative samples. Amongst the Benign Lesions, Liver abscess was the most common lesion with 8% cases followed by Cirrhosis [6%] and Normal liver [6%].Metastatic tumors were the most common among the malignant lesions and constituted 50% of the cases followed by Primary liver carcinoma-Hepatocellular Carcinoma [12%].Among the metastatic lesions, adenocarcinoma was the most common .Conclusion: Categorisation of liver lesions into malignant or benign can be done by Ultrasound guided FNAC with high accuracy. Guided FNAC is simple and safe and helps in distinguishing liver lesions without much difficulty than ultrasonography alone or fine needle aspiration cytology alone.*

Keywords: *Ultrasound, Fine Needle Aspiration Cytology, Liver lesions, Benign, Malignant*

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I. Introduction

Liver is one of the most common sites for both neoplastic and non-neoplastic lesions.In the suspected liver diseases ultrasound is the first and most important diagnostic tool. As sonography alone has its limitations, cytomorphologic analysis by FNA is required to increase the diagnostic accuracy. Ultrasound guided FNA of liver is safe, cheap and relatively noninvasive procedure with minimum complications.[1] Remarkably, ultrasound offers the advantage of real time visualization of the needle tip. The aim of the present study was to categorize the lesions of liver into inflammatory, non-neoplastic and neoplastic lesions by ultrasound guided fine needle aspiration cytology and to correlate the ultrasound findings and FNA diagnosis of liver lesions. However, Absolute contraindications for liver FNAC are markedly abnormal coagulation parameters, and relative contraindications include the location of focal lesions in the liver parenchyma that cannot be safely accessed because they are close to large vascular structures.[2]

II. Material And Methods

Study Design: A Prospective One Year Observational Study
Study Location: LN Medical College and Hospital
Study Duration: January 2018 to December 2018
Sample Size: 50 cases
Subjects and Selection method: This is a prospective study comprising of 50 cases of liver lesions diagnosed clinically and radiologically and referred to Department of Interventional Radiology, LN Medical College and JK Hospital, Bhopal. Abdominal ultrasonography was carried out in all cases. Before FNAC, BT, CT and PT were done in all the cases. FNAC was performed under ultrasound guidance using 22 gauze needle or spinal needle. Smears were made from aspirated material. Few slides were fixed immediately in 95% alcohol and stained with H& E. Air dried smears were prepared for May Grunwald Giemsa stain. Stained smears were examined.

III. Results

USG FNAC was performed in 50 cases. Patients age ranged from 0-80 years with majority of cases in age group 21-50 years with male predominance.The malignant lesions were common in the age group 50-80 years while benign lesions were common in age 0-20 years. Out of 50 cases, 13 [26%] cases were Benign and 37 [74%] were Malignant or Suspicious for malignancy. All the samples were satisfactory and had good diagnostic yield so there were no non-representative samples. Amongst the Benign Lesions, Liver abscess was the most common lesion with 8% cases followed by Cirrhosis [6%] and Normal liver [6%].Metastatic tumors were the most common among the malignant liver lesions and constituted 50% of the cases followed by Primary liver carcinoma-Hepatocellular Carcinoma[12%]. Among the metastatic lesions, adenocarcinoma was the most common with colorectum being the most common primary site.

Table 1. Age wise distribution of Liver Lesions

Age Group	Benign	Malignant/Suspicious
0-20	2	1
21-50	8	7
51-80	3	29
Total	13	37

Table2. Gender wise Distribution of Liver Lesions

Gender	Males	Females
No of Cases	30	20

Table.3 Distribution of Liver Aspirates

S no.	Liver Aspirates	No of Cases	%
1	Benign Aspirates	13	26
2	Malignant Aspirates	33	66
3	Suspicious of Malignancy	04	08
4	Non Representative	00	00
Total		50	

Table 4. Incidence of Various types of Benign and Malignant liver Aspirates

S no	Hepatic lesion	No Of Cases	%
A	**Benign**		
1	Normal Liver	3	6
2	Cirrhosis	3	6
3	FNH	1	2
4	Abscess	4	8
5	Parenchymal Liver Disease	1	2
6	Regenerative Nodule	1	2
B	**Malignant**		
1	Metastases	25	50
2	Primary Liver Carcinoma		
a	**Hepatocellular Carcinoma**	6	12
b	**Intrahepatic Cholangiocarcinoma**	2	4
3	Suspicious	4	8

USG and FNAC Images Of Common Benign and Malignant Liver Lesions

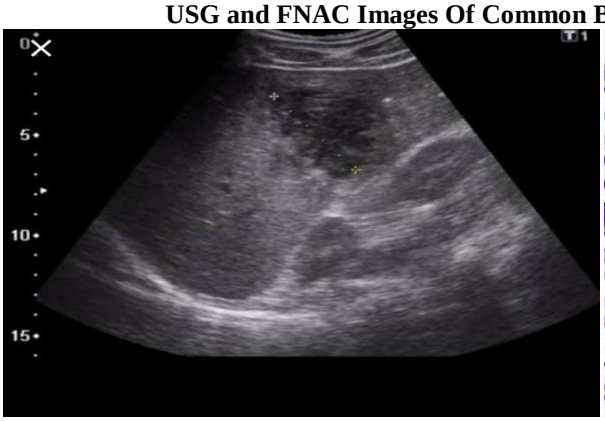

Image1.USG image of Pyogenic Liver Abscess

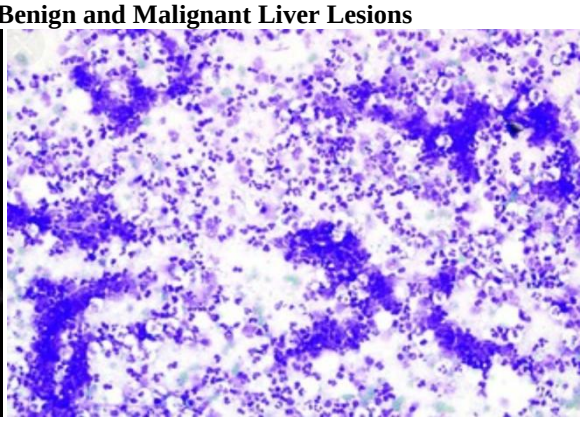

Image2. FNAC Image Of Pyogenic Liver Abscess

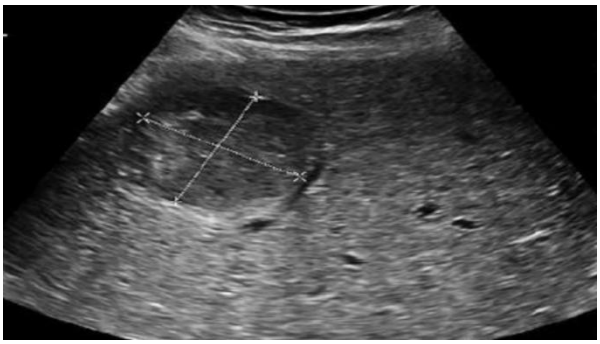

Image3.USG image of Hepatocellular Carcinoma

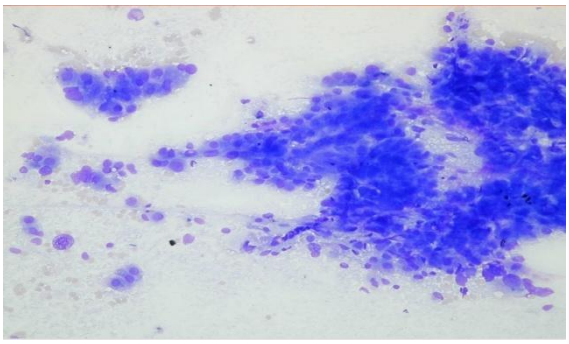

Image4.FNAC image of Hepatotocellular Carcinoma

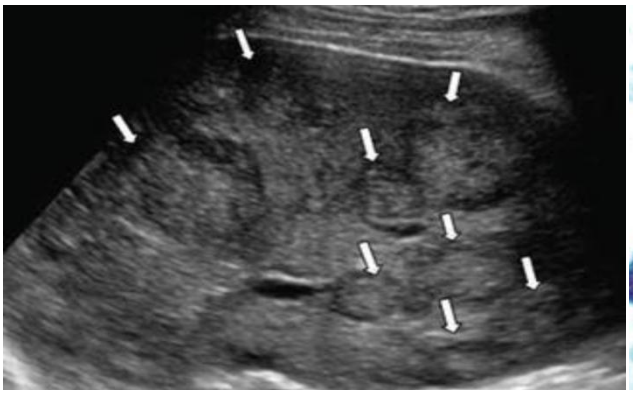

Image 5. USG image of multiple liver metastases

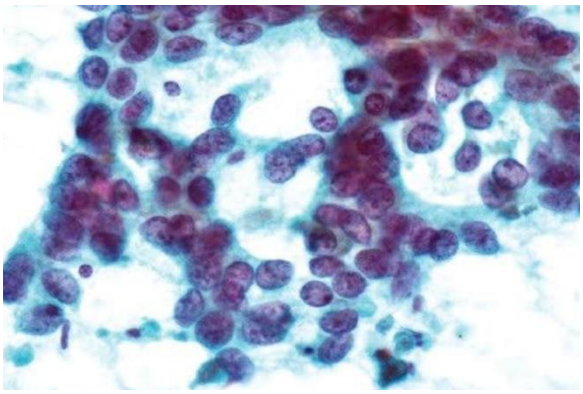

Image 6.FNAC Image of Liver metastasis

IV. Discussion

FNAC is a very useful procedure for the diagnosis of various hepatic lesions. It offers accuracy without major complications and minimal interventions at low cost. The only absolute contraindications are marked haemorrhagic diathesis and suspected vascular lesion.[3] No complications were seen during this study. The patients main complaints were, pain abdomen in right upper quadrant, anorexia, weight loss and abdominal mass. SGOT, SGPT and alkaline phosphatase were increased in 60% of cases. All cases were subjected to ultrasonography guided FNA which has been reported to be safe, useful and accurate technique for making cytological diagnosis of hepatic lesions.[4,5]

In the present study patients age ranged from 0-80 years with maximum cases in 51-80 years age group similar to Franca et al [6]. M: F ratio was 1.5:1 showing male predominance. Franca et al [6], Gatphoh et al [7]observed male preponderance, while Siddalinga reddy et al [8] observed slight female preponderance. The neoplastic lesions were common between 51-80 years and non-neoplastic lesions in age group 0-50 years similar to that of study by Rasania A et al [9]. The cytomorphological details were evaluated as described by Cohen et al [10]. Neoplastic lesions were the most frequently diagnosed in the present study similar to Khurana et al [11], Ramadas et al [12] and Sapna Goel et al [13].

In the present study, out of the 37 cases of malignant lesions, hepatocellular carcinoma constituted 6 cases [12%] and remaining were secondary metastatic lesions 25 cases [50%]. Similar observations were noted by Ceyhan et al [14] who observed secondary metastatic tumors (51.65%) as more frequent malignant hepatic lesions. Most frequent primary hepatic malignancy on ultrasound guided fine needle aspiration cytology of liver was hepatocellular carcinoma and was diagnosed in 6 cases. Most frequent secondary hepatic tumor were metastatic adenocarcinomas asobserved by most studies including the present study [13,15]. Metastatic deposits showed features of adenocarcinoma in 88.5% of cases which is similar to that observed by Rasania A et al [9]. Most common site was colorectal malignancies as observed by MCM Swamy et al [15].

Abundant well-prepared material and thorough screening of smears, combined with relevant clinical, radiologic and serologic studies, are the key features to increase the diagnostic accuracy of FNAC. Recent studies have reported good sensitivity of FNAC for liver malignancy, ranging between 67 to 100%, and specificity of 100% or close to it. False-positive diagnoses are rare and positive predictive values approach 100%.[16,17]

V. Conclusion

Ultrasound guided fine needle aspiration cytology of liver is a very valuable and cost effective means of distinguishing liver lesions without much difficulty, than ultrasonography alone or fine needle aspiration cytology alone. On radiological examination, neoplastic and no-nneoplastic lesions show overlapping features, hence cytomorphological analysis by FNAC increases the diagnostic accuracy which aids in better patient management.

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