

Original Research Article**Importance of USG Guided FNAC in Diagnosis of Space Occupying Lesions of Liver****Anjali Singh¹, Parul Dargar², Pooja Jain³, Sana Meer⁴**¹Associate Professor ²Assistant Professor ^{3,4}Resident, Index Medical College, Indore, Madhya Pradesh 452001, India.**Corresponding Author:****Anjali Singh**Associate Professor,
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(Received on 18.04.2018,**Accepted on** 19.04.2018)**Abstract**

Most common sites for neoplastic and non neoplastic lesions is Liver. Ultrasound is the first and most important diagnostic tool for liver diseases. As sonography alone has its limitations, cytomorphologic analysis by FNA is required to increase the diagnostic accuracy. Accurate diagnosis of hepatic masses are very important as treatment ranges from supportive care for advanced metastatic lesions to primary carcinoma [1]. Ultrasound guided FNA of liver is safe, cheap, and relatively non-invasive procedure with minimum complications. Cytological examination is sensitive and highly specific technique and can be routinely used for evaluation of liver diseases.

Keywords: Fine Needle Aspiration Cytology; Ultrasound; SOL; Hepatocellular Carcinoma; Metastatic.

Introduction

Most common sites for neoplastic and non neoplastic lesions is Liver. Ultrasound is the first and most important diagnostic tool for liver diseases. As sonography alone has its limitations, cytomorphologic analysis by FNA is required to increase the diagnostic accuracy. Accurate diagnosis of hepatic masses are very important as treatment ranges from supportive care for advanced metastatic lesions to primary carcinoma:

1. Ultrasound guided FNA of liver is safe, cheap, and relatively noninvasive procedure with minimum complications.

2. Cytological examination is sensitive and highly specific technique and can be routinely used for evaluation of liver diseases.

The aim of our study is to categorize the lesions of liver into inflammatory, non neoplastic and neoplastic by ultrasound guided FNAC and correlate the ultrasound findings and FNA diagnosis of liver.

Aims and Objectives

1. Evaluate non neoplastic lesions and neoplastic lesions in liver.
2. Correlate ultrasound findings with USG guided FNA in liver.

Materials and Methods

This is a retrospective study of two years from January 2016 to December 2017 of clinically or radiologically diagnosed liver lesions and referred to Department of Pathology, Index Medical College, Indore (M.P.). Liver lesions were categorized as single, multiple or diffused and echogenicity was studied. BT, CT and PT were done before performing FNA in all cases. USG guided FNAC was performed using 22 gauge needle under aseptic precautions. One to three passes were done until the adequate material was yield. Smears were made from aspirate material. Few slides were fixed immediately in

95% alcohol and stained with H&E. Air dried smears were prepared for Wrights stain. Stained smears were examined.

Observation and Results: USG guided FNAC was performed in 100 cases. Patients age ranged from 30-90 years with mean age of 50 years. 60(%) cases were male and 40 (%) cases were female. M:F ratio is of 1.5:1.

Out of 100 cases, 4 cases(4%) of inflammatory, 8 cases of cirrhosis (8%), 6 cases of regenerative hyperplasia(6%), 1 case of simple hepatic cyst (1%). 70 cases were malignant, one case was suspicious of malignancy. 10 cases of inconclusive. Therefore diagnosis was possible in 90 cases. 70 Neoplastic cases were found (70%). Out of these 42 cases were primary malignant liver lesions (60%) including 40 cases of hepatocellular carcinoma (95.2%) and 2 cases of NHL (4.8%).

Metastatic tumours including 28 cases (40%) of which adenocarcinoma constitutes 21 cases (75%), Squamous

cell carcinoma constitute 6 cases (21.4%). One case of lymphoma (3.5%) deposits in liver was found.

On ultrasound examination, solitary space occupying lesions were seen in 40 cases (44.4%), Multifocal lesions in 36 cases (40%) and diffuse lesions in 14 cases (15.6%). Lesions show mixed echogenicity in 33 cases (36.7%), hypoechoic in 31 cases (34.4%), hyperechoic in 26 cases (28.9%).

Out of 40 cases of HCC, 33 cases had solitary SOL, and 7 cases had multiple SOL. Metastatic carcinoma group showed solitary lesion in 8 cases and multiple lesions in 20 cases. All 3 cases of NHL presented as multifocal lesions.

Ultrasound diagnosis correlated well with 65 cases out of 84 cases. Discrepancies were found in 19 cases of hepatic lesions between ultrasound diagnosis and cytological diagnosis. Thus ultrasound may be fallacious in diagnosing malignancies.

Table 1: FNAC diagnosis of liver aspirates:

Type of Aspirates	No of cases	%
1 Inflammatory lesion	4	4%
2 Regenerative hyperplasia	6	6%
3 Cirrhosis	8	8%
4 Simple hepatic cyst	1	0.98%
5 Suspicious of malignancy	1	0.98%
6 Malignant aspirate	70	70%
7 Inconclusive	10	10%
Total	100 cases	100%

Table 2: Malignant Aspirates

Primary Malignant Lesions	42	60%
HCC	40	95.2%
Primary NHL	02	4.8%
Metastatic Deposits	28	40%
Adenocarcinoma	21	75%
Squamous cell carcinoma	06	21.4%
Lymphoma Deposits	01	3.5%
Total	70	70%

Table 3: USG findings in malignant aspirates

	Total	Solitary SOL	Multiple SOL
HCC	40	33 (82.5 %)	07 (17.5%)
Metastatic Carcinoma	28	08 (28.6 %)	20 (71.4 %)
NHL	03	0	03 (100 %)

Table 4: Correlation and discrepancies in FNA and US findings

Lesions	FNA diagnosis	US Correlation	Discrepancies
Metastasis	28	24	04
HCC	40	35	05
Simple cyst	01	0	01
Abscess	04	01	03
Cirrhosis	08	05	03
Lymphoma	03	0	03
Total	84	65 (77.4 %)	19 (22.7 %)

Discussion

Liver disorders commonly affects all age group, with peak incidence between 5th to 6th decade of life [4].

In our study patients age range from 30-90 years with mean age of 50 years, similar to Franca et. al. [5]. Male: Female ratio was 1.5:1 showing male predominance. Franca et. al. [5], Gatphoh et. al. [2] observed male predominance, while Siddalinga Reddy et. al. [6] observed slight female predominance.

The neoplastic lesions were common between 45-70 years and non-neoplastic lesions were seen in age group of 30-70 years which is similar to study by Rasanias A et. al. [7]. The cytomorphological details were evaluated as described by Cohen et. al.

In 2007, Rasanias A et. al. discussed that the main indication of FNAC of liver are single or multiple nodular lesions, demonstrated by palpation, nuclear scan, CT or USG. FNAC is a very useful procedure for diagnosis of various hepatic lesions. It offers accuracy without major complications and minimal interventions at low cost [7].

In our study, on ultrasound examination, solitary space occupying lesion were seen in 40 cases (44.4%), multiple/multifocal lesions in 36 cases (40%) and diffuse lesion in 14 cases (15.6%). Lesions showed mixed echogenicity in 33 cases (36.7%), hypoechoic in 31 cases (34.4%), and hyperechoic in 26 cases (28.9%). While Swamy MCM et. al. [9] in their study observed solitary lesions (51.38%) in over half of his patients followed by multifocal lesions in 26 (36.12%), diffuse parenchymal disease in eight cases (11.12%) and normal echogenicity in one case (1.38%).

Neoplastic lesions were the most frequently diagnosed in our study similar to Khurana et. al. [10], Ramadas et al [1] and Sapna Goel et al [11] whereas, Gatphoh et. al. [2] found near equal frequency of both neoplastic and non neoplastic lesions. 80% of cases of HCC & 25% of cases of metastatic deposits showed solitary SOLs, same as reported by Ahuja A et. al. [12].

In the present study 19 cases (19%) were categorized as non-neoplastic lesions. They were pyogenic abscess 4 cases (2.94%), diffuse parenchymal disease as cirrhosis 8 cases (8%) and regenerative hyperplasia 6 cases (6%), and simple hepatic cyst one case (0.98%). The cases which were diagnosed as diffuse parenchymal disease in the form of cirrhosis and regenerative hyperplasia showed variable findings such as degenerative changes, reactive changes, inflammation, fibrosis as well as fatty change.

All neoplastic lesions 70 cases (70%) in our study were malignant which is same as that observed by Khurana et. al. [10] whereas Salamao et. al. [13] and Ceyhan et. al. [14] observed malignant lesions-predominantly with few benign lesions. These observations indicates that

malignant lesions were diagnosed without much difficulty in ultrasound guided fine needle aspiration cytology smears, than benign lesions and other non neoplastic lesions.

In our study, out of the 70 cases of malignant lesions, primary hepatic tumors constituted 42 cases [60%] and remaining were secondary metastatic lesions 28 cases [40%]. 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 40 cases. The early recognition of HCC appears to be of importance in view of the favourable diagnosis in some patients in whom it can be resected. The diagnostic accuracy of FNAC in the specific diagnosis of HCC was about 85% in many reports. Most studies including the present study observed similar findings. One case of primary NHL was diagnosed in the present study. Cholangiocarcinoma accounted for second most common primary hepatic malignancy in most studies and least common primary malignant lesions were malignant lymphoma and hemangioendothelioma.

Most frequent secondary hepatic tumor were metastatic adenocarcinomas as observed by most studies including our study [9,11]. Metastatic deposits showed features of adenocarcinoma in 75% of cases which is similar to that observed by Rasanias A et. al. [7]. Squamous cell carcinoma deposits in 21.4% of cases, which is higher than that observed by Rasanias A et. al. [7]. Lymphoma deposits was diagnosed in two patients who were adult male and is similar to that noted by Gatphoh E .D. [2].

Thus ultrasound guided fine needle aspiration cytology of liver is most valuable and cost effective means of distinguishing primary hepatocellular carcinoma and secondary adenocarcinoma without much difficulty than ultrasonography alone or fine needle aspiration cytology alone. Ultrasound enables us to find out liver SOL, but it is difficult to make an accurate diagnosis of tumors as it has its limitation in differential diagnosis. Hence ultrasound can be combined with ultrasound guided FNAC for the diagnosis of SOL of liver, in order to improve the accuracy of its diagnosis.

Conclusion

Primary malignant tumors were the commonest of the liver lesions as compared to metastatic deposits. Hepatocellular carcinoma was the commonest primary and colorectal adenocarcinoma was more common metastatic deposits in liver. Few cases of multicentric HCC and solitary deposits were observed in our study. On

ultrasound neoplastic and nonneoplastic lesions show overlapping features, hence cytomorphological analysis by FNAC increases the diagnostic accuracy.

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