

Original article

Study of image guided fine needle aspirates from lesions of liver: A two year study in a tertiary care center

Vijay Subhashrao Bonde¹, Nanda J. Patil²

Department of Pathology, 2nd floor, College building, KIMS, Karad, Dist. Satara, Maharashtra, India.

Corresponding author:- Vijay Subhashrao Bonde

Abstract

Background: The liver is the most common easily accessible solid organ hence image guided FNAC is considered as an important diagnostic modality for preoperative evaluation of lesions of liver. As compared to a core biopsy, guided FNAC is a more sensitive, less invasive method with lower complication rate.

Material and Methods: A two year prospective study of image guided FNAC of lesions of liver was done from May 2014 to April 2016. The study included total 51 cases which were selected irrespective of age and sex. USG or CT guided FNAC was done 22-23 gauge needle. Air dried and alcohol fixed smears were stained with Giemsa and H&E stain respectively.

Results:- The study included 51 cases, of which 2 cases were inadequate. In remaining 49 cases, there were 25 males and 24 female patients. Most of these patients presented in 5th-7th decade of life. The cytological diagnosis included 02 cases of liver abscess, 20 cases of hepatocellular carcinoma and 27 cases of metastatic malignancies.

Conclusion:- Image guided FNAC promises a high rate of accuracy of diagnosis particularly in malignant lesions. It provides rapid and valuable morphological information essential for patient management.

Keywords:- Image guided FNAC, Liver, Hepatocellular carcinoma, Metastatic malignancy

Introduction

The liver is the most common easily accessible solid organ hence image guided FNAC is considered as an important diagnostic modality for preoperative evaluation of lesions of liver especially solid lesions. As compared to a core biopsy, guided FNAC is a more sensitive, less invasive method with lower complication rate. Thus, FNA liver has become a very well accepted procedure with a high diagnostic efficacy and a low complication rate. It has quickly superseded the use of coarse cutting needles in most situations involving cancer diagnosis.^[1]

Aim: To study various lesions of the liver with image guided fine needle aspiration cytology

Objectives:

1. To study the frequency of distribution of lesions of liver and to classify them into

non-neoplastic and neoplastic category. Malignant lesions were further classified as primary malignancy and metastatic lesions.

2. To correlate the cytological findings with tumour markers wherever possible.
3. To find utility of image guided fine needle aspiration cytology in the diagnosis of lesions of liver.

Materials and methods

Selection of Cases:- The present study is a hospital based prospective study of various lesions of liver diagnosed with image guided FNAC during a period of May 2014 to April 2016, which includes 51 cases.

Inclusion Criteria:- All the patients, irrespective of age and sex, having lesions of liver, referred to

the pathology department for image guided FNAC were included in this study.

Exclusion Criteria:- Patients having deranged coagulation profile, obstructive jaundice, hydatid cyst, suspected haemangiomas of liver were excluded from the study.

Method:- The procedure was performed after taking informed written consent. The detail clinical history and relevant investigations were reviewed. A lesion was selected after taking into consideration the 3D display provided by USG or CT. Depending upon the depth of lesion, the aspiration was done by using 22-23 gauge long needle (30-50mm) or lumbar puncture needle (90mm). The smears were prepared and wet fixed with ether alcohol for haematoxylin and eosin (H&E) stain. The air dried smears were stained with Romanowsky stains like Leishman or Giemsa

stain. Other special stains like AFB, PAS, etc. were performed wherever required.

Interpretation:- The smears showing adequate material were diagnosed in the light of clinical details and relevant investigations. The lesions were further classified as neoplastic or non-neoplastic. Neoplastic lesions were further categorised as benign or malignant. Malignant lesions were classified into primary or secondary.

Observation and results

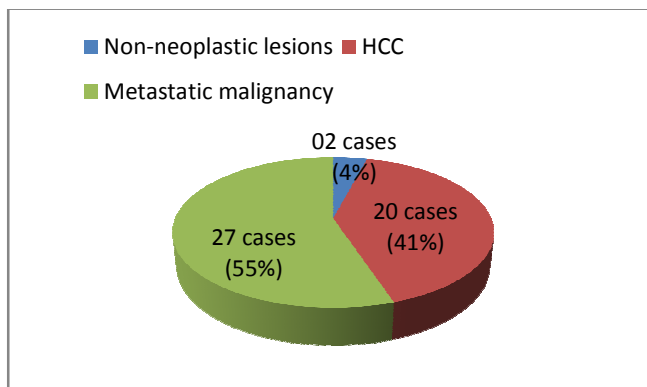
A two year study of image guided FNAC of lesions of liver included 51 cases. Adequacy obtained in 49 cases; still in 2 cases aspirates were inadequate for opinion after aspirating twice. These 2 cases were excluded from further statistics. Amongst these USG guided FNAC was done in 44 cases while CT guidance was done in 05 cases.

Table 1.Age and sex distribution of lesions of liver.

Age in years	Males	Females	Total	Percentage
01-10	0	0	0	0
11-20	0	0	0	0
21-30	0	0	0	0
31-40	0	4	4	8.16
41-50	5	4	9	18.37
51-60	10	9	19	38.78
61-70	7	6	13	26.53
71-80	3	1	4	8.16
TOTAL	25	24	49	100

The 83.67% of the cases were in the age group 5th-7th decade of life with slight male predominance (M:F of 1.04:1).

Figure-1. Distribution of lesions of liver diagnosed on cytology.



Metastatic malignancy (27cases-55.10%) was the most common lesion in the liver followed by hepatocellular carcinoma including 20 cases and non neoplastic lesions 02 cases. Metastatic adenocarcinoma (25cases-92.59%) was the commonest metastatic malignancy observed in our

study. In metastatic malignancies, 25 cases were diagnosed as metastatic adenocarcinomas. One case was diagnosed as metastatic squamous cell carcinoma, in a known case of squamous cell carcinoma of cervix, while other case was diagnosed as metastasis of pleomorphic sarcoma.

Table-2. Different types of metastatic tumours in the liver.

Types of metastasis	No. of cases	Percentage
From Pancreas	06	22.22%
From Colon	05	18.52%
From Ovary	05	18.52%
From Lung	04	14.81%
From Breast	03	11.11%
From Gallbladder	02	07.40%
Squamous cell carcinoma from cervix	01	03.70%
Metastatic pleomorphic sarcoma	01	03.70%
Total	27	100%

Metastatic adenocarcinoma was the most common metastatic malignancy in present study. Pancreas (06 cases) was the most common organ which had metastasis to liver followed by colon and ovary (05 cases each). The rare cases were metastatic squamous cell carcinoma from cervix and metastatic pleomorphic sarcoma from unknown

primary. There were 20 cases of hepatocellular carcinoma in the present study. Majority of the cases (50%) were moderately differentiated HCC (10 cases), while 07 cases (35%) were of well differentiated HCC and 03 cases (15%) were of poorly differentiated HCC. The non-neoplastic category included two cases of liver abscess

Table-3. Results of tumour markers in lesions of liver

Cytological diagnosis	Total no.	Increased levels tumour markers				Consistent with cytological Diagnosis
		AFP	CEA	CA125	CA19.9	
HCC	20	18/20	-	-	-	18/20(90%)
Metastasis	20	-	07/09	05/05	05/06	17/20(85%)
Total	40					35/40(87.50%)

Tumour markers were done in 40/ 47 cases of hepatic malignancies. Levels of alfa fetoprotein (AFP) were increased in 18/20 cases of HCC. CEA levels were increased in 7/9 cases of metastatic adenocarcinoma. CA125 levels were raised in all

cases (5/5) of metastatic surface epithelial malignancies of ovary, while CA19.9 levels were raised in 5/6 cases of metastatic pancreatic adenocarcinoma.

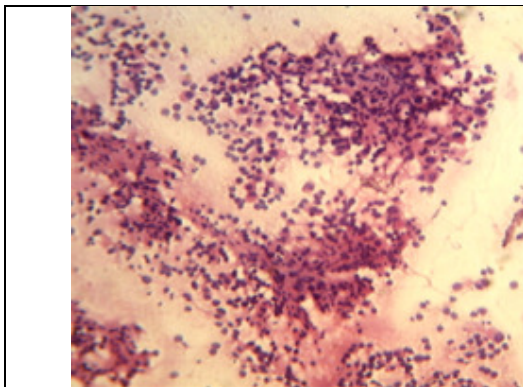


Fig-2.HCC with trabecular pattern, sheets and clusters. Cyto.(H&E,100x).

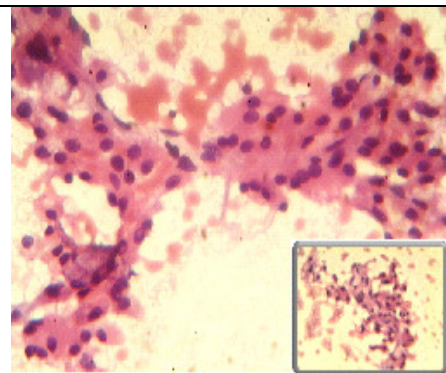


Fig-3.HCC trabecular pattern with entrapped endothelial cells. Cyto. (H&E ,400x)(Inset-endothelial cells,400x).

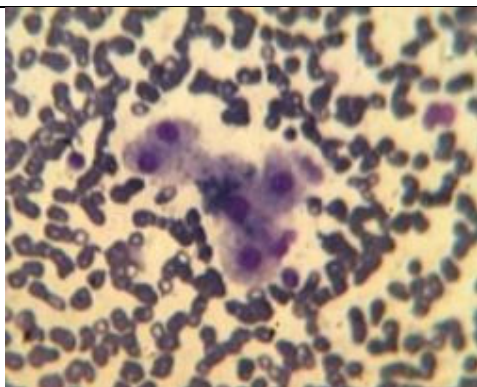
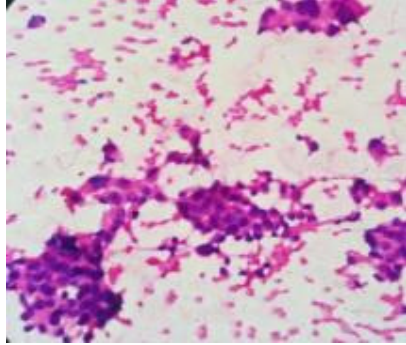



Fig-4.Bile pigment in HCC. Cyto.(H&E ,400x).



Fig-5.Arrows showing Intranuclear inclusions-HCC. Cyto.(MGG,400x).

	
<p>Fig-6. Metastatic adenocarcinoma in liver from breast. Cyto.(H&E,100X).</p>	<p>Fig-7. Metastasis from pleomorphic sarcoma in liver. Cyto.((H&E,400x).</p>

Discussion

The study of image guided FNAC of lesions of liver was carried out over a period of 2 years which included 51 cases. Most patients were males in the 6th and 7th decades of life, as observed in studies done by other authors. ^[2,3,4,5,6] Malignancy (95.92%) was the most common lesion seen in the present study. Similar findings were seen studies by other authors. ^[4,5,7-12] In the present study, 27 cases (57.45%) out of 47 malignant lesions of the liver were of metastatic malignancies. Metastatic tumours of the liver were more common as compared to primary hepatocellular malignancies as observed by most authors. ^[5, 9,11,12,13]

Out of 27 cases with metastatic malignancies in our study, 25 cases were of metastatic adenocarcinoma (92.59%). Thus metastatic adenocarcinoma was the most common metastatic malignancy of the liver in our study. Similar findings were observed by studies done by other authors. ^[5,11,13,14] In the present study metastatic adenocarcinoma of the pancreas (06 cases) was the most common metastatic malignancy of the liver followed by colon (05 cases). Though literature mentions adenocarcinoma of the colon is a commonest

metastatic malignancy found in the liver. ^[5,11,13,14]

Tumour markers were done in 40 cases and contributed in diagnosis of 35 cases (87.50%). AFP played a significant role in diagnosis of hepatocellular carcinoma in 90% cases. Also it helped to differentiate HCC from metastatic cancers. CEA helped in the confirmation of adenocarcinoma in 77.78% cases, while CA125 was helpful in the diagnosis of all the cases of metastatic ovarian cancers. The pancreatic carcinomas were confirmed with CA19.9 in 83.33% cases. This emphasizes the role of tumor markers in diagnosing different types of hepatic malignancies and for differentiation of the lesion as a primary or metastatic.

Conclusion

USG and CT guided FNAC is a simple, rapid, minimally invasive and less expensive method of assessing lesions of liver and ensures a high patient compliance with minimal complications. Image guided FNAC promises a high rate of accuracy of diagnosis particularly in malignant lesions especially in cases of wide spread and inoperable malignancie.

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