

# Spectrum of Lesions in Ultrasound guided FNAC of Liver Lesions

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## ABSTRACT

Liver involvement is seen in many neoplastic as well as benign lesions. Management of these lesions depends on accurate diagnosis. Image guided fine needle aspiration cytology can be used effectively in diagnosis of these lesions especially the malignant ones. This was a retrospective study of 50 cases of liver lesions diagnosed over a period of one year. Diagnosis was made based on cytological findings and was correlated with biopsy wherever required. Out of 52 cases of liver lesions, 43 cases were malignant, 5 cases were benign and 4 aspirates were inadequate for diagnosis. Most of the cases amongst malignant lesions were metastatic carcinomas (26 cases) while there were 15 cases of primary hepatocellular carcinomas (HCC). Two cases showed features where it was not possible to differentiate between HCC and metastasis. Fine needle aspiration cytology is an easy, rapid, cost effective and accurate method for diagnosis of liver lesions.

**KEY WORDS:** FNAC, liver lesions, ultrasound

## INTRODUCTION:

Liver involvement is seen in many neoplastic and non neoplastic lesions and the lesions are easily accessible to Fine Needle Aspiration Cytology (FNAC). Appropriate clinical management requires accurate diagnosis and FNAC can help in evaluating the cases. It is very important to categorize the type of lesions, whether primary or metastatic and if metastatic probable site of primary has to be commented<sup>[1]</sup>.

Radiological guidance is must in performing the procedure so as to accurately hit the target lesion. Radiology guided FNAC is now becoming the initial investigation of choice for various hepatic lesions<sup>[2]</sup> and can provide definitive diagnosis in most patients with minimum trauma and minimum risk of complications<sup>[3]</sup>.

There are many lesions that can be included as differentials in liver lesions and include primary

tumors, metastasis, abscesses, various congenital cysts, and granulomas. Liver malignancy is one of the most common causes of death in adults and is also the most common site of metastasis in solid malignancies<sup>[4-5]</sup>.

The aim of the present study is to know the spectrum of lesions involving the liver and to describe the cytomorphological features of the lesions.

## MATERIALS AND METHODS:

This was a retrospective observational study of 52 cases of liver lesions on which FNAC was performed under ultrasound guidance in last one year duration. Data were retrieved from the departmental records and were evaluated. Prior to FNAC, PT/INR of every patient was checked along with complete clinical details regarding presenting symptoms, history of any known primary or pre existing liver disease, personal history, laboratory parameters. FNAC was performed by radiologist under all aseptic precaution using a 23 G lumbar puncture needle attached to a 10 ml syringe and aspiration technique. Smears were prepared by trained Cytopathology technician. Slides were stained with Giemsa and Papanicolaou stains and were diagnosed on cytology. Radiological correlation was done wherever required. Serum Alfa- fetoprotein levels and HBsAg status was

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**Table 1:** Distribution of liver lesions.

Diagnosis	Diagnosis Breakup	Number of cases
Benign (5 cases)	Hemangioma	2
	Abscess	2
	Reactive hyperplasia	1
Malignant(43 cases)	Metastatic carcinoma	26
	Hepatocellular carcinoma	15
	Poorly differentiated carcinoma	2
Inadequate		4
Total		52

also evaluated whenever needed.

## RESULTS:

In this study, out of 52 cases of liver lesions, most of the cases were malignant (43 cases) while only five cases were diagnosed as benign. Of the malignant cases most common tumors were metastatic (26 cases) followed by primary hepatocellular carcinomas (15 cases) and two cases diagnosed as poorly differentiated carcinomas. The most common primary site to metastasize to liver was lung (8 cases) followed by gall bladder (4 cases), breast (4 cases), Ovary (2 cases), lower gastro- intestinal tract (2 cases) and one case each of peri- ampullary carcinoma, pancreas, adrenal cortical carcinoma, oral cavity squamous carcinoma. There were two cases of metastatic carcinoma of which primary could not be ascertained. There were five cases which were diagnosed as benign and include hemangioma (2 cases), two cases of Abscesses (1 amoebic abscess and one liver abscess) and one case of reactive hyperplasia. The diagnosis was made correlating clinical, radiological, pathological findings.

## DISCUSSION:

FNAC is a very useful technique for diagnosis of focal lesions and radiological guidance is necessary for proper localization. Many studies have been performed demonstrating the usefulness of FNAC in diagnosis of Liver lesions<sup>[6-10]</sup>.

FNAC is a very easy and minimally invasive technique which has a minimum complication rates. Liver FNAC is contraindicated in only few cases especially in cases with bleeding diathesis and patients should be screened for any bleeding disorders by evaluating the PT/INR.

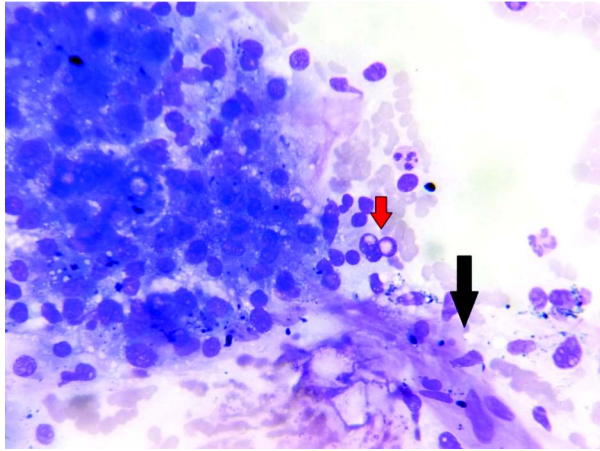
Hepatic mass lesions may present with

abdominal pain, weight loss, anorexia and very few cases present with abdominal masses. Few cases may be asymptomatic and the mass lesion may be detected as an incidental finding or during metastatic workup for any known primary. In our study there were 43 malignant lesions (82.7%) which are in concordance with various studies performed in literature<sup>[11-15]</sup>.

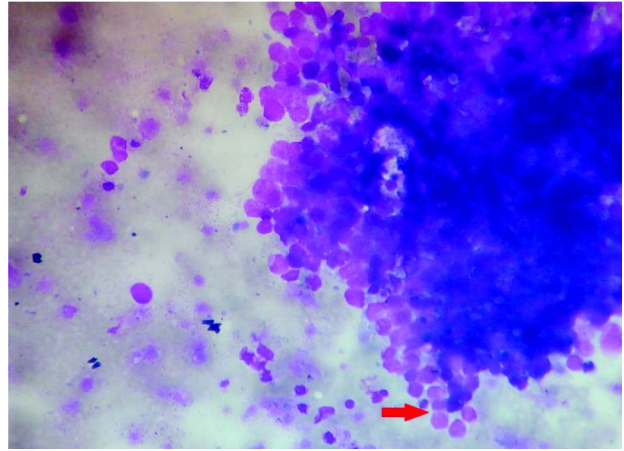
It is very important to differentiate primary Hepatocellular carcinoma (HCC) from metastatic adenocarcinomas as management of these two lesions differs significantly. FNAC can be very reliable in differentiating between primary HCC and metastasis based on cytomorphological features. Except for few cases of poorly differentiated HCC, cytology can easily differentiate between HCC and metastasis. In this study we diagnosed HCC based on the presence of clusters and trabeculae of neoplastic polygonal cells with small capillaries transgressing the clusters. Cells showed macronucleoli, with inclusions (Figure 1, seen in all 15 cases) along with scattered bare nuclei. In 7

**Table 2:** Site of primaries in cases of metastatic adenocarcinoma.

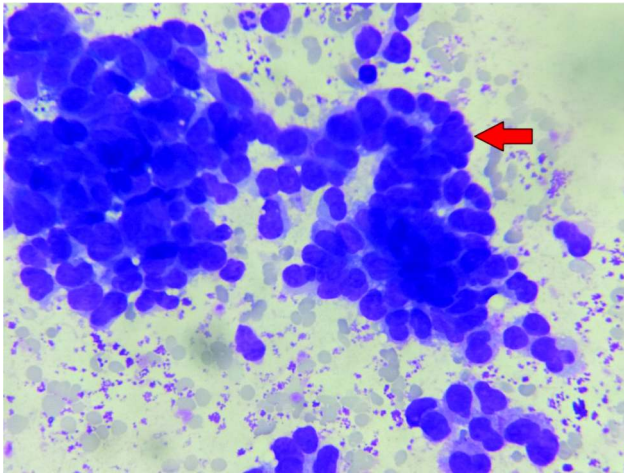
Site of primary	Number of cases
Lung	8
Gall bladder	4
Breast	4
Ovary	2
Lower gastrointestinal tract	2
Peri- ampullary	1
Pancreas	1
Adrenal cortical carcinoma	1
Oral cavity squamous carcinoma	1
Malignancy of unknown origin	2
Total	26



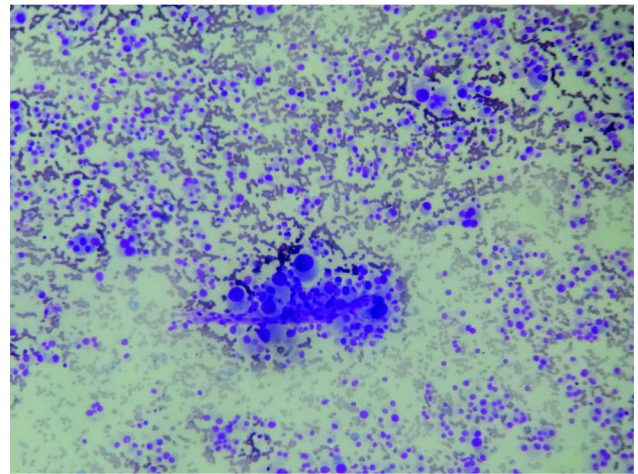
**Figure 1:** Giemsa stained smears show transgressing capillary (black arrow), intranuclear inclusions (pink arrow) and nucleoli (400x).



**Figure 3:** Giemsa stained smears show small round cells with hyperchromatic nuclei, coarse chromatin and nuclear molding (arrow) (400x).



**Figure 2:** Giemsa stained smears show a carcinoma cells in tightly packed clusters with high N:C ratio and focal glandular arrangement (arrow) (400x).



**Figure 4:** Giemsa stained smears showing carcinoma cells with many bizarre forms consistent with metastasis in a known case of adreno-cortical carcinoma (100x).

out of 15 cases, cytoplasmic pigments were present. Cytomorphological features of metastatic adenocarcinoma (Figure 2) were tightly cohesive clusters of malignant cells with high Nuclear-cytoplasmic ratio, hyperchromatic nuclei and scanty cytoplasm (seen in all cases of metastatic adenocarcinoma). Gland formation and intracytoplasmic mucin was also noted. There were two cases of squamous carcinoma (one from oral cavity and other from gall bladder) showing malignant cells with keratinisation. There were three cases of small cell carcinoma (Figure 3) of lung metastasizing to liver showing dissociated as well as few clusters of malignant cells with high N:C ratio, hyperchromatic nuclei with coarse chromatin and many mitotic figures. Focal nuclear moulding was also seen along with necrotic debris. All three cases on evaluation

showed mass lesions in lung. There were 2 cases with malignant cells showing no specific features of HCC or any other carcinomas but were showing scattered bare nuclei and cells showing macronucleoli. However, there was absence of any other features suggestive of HCC and there were no primary found even on radiological evaluation. Thus these were categorized as poorly differentiated carcinoma. In Both cases, AFP was not elevated and viral markers were negative. Both cases lost to follow up. The most common primary site of metastasis was lung followed by Gall bladder, breast, ovary and lower GI tract. There were few rare sites which metastasized to liver like oral cavity squamous carcinoma and adrenal cortical carcinoma (Figure 4).

There were five cases which were diagnosed as benign. Two cases showed features of abscess with

one showing characteristic anchovy sauce appearance and other case showed abundant neutrophils against a necrotic background. Both were managed medically. Two cases were diagnosed as Hemangioma based on radiological and cytological features. Smears were hemorrhagic with few scattered capillary channels with endothelial cells. One case was diagnosed as reactive hyperplasia based on radiological findings. Four cases were inadequate for diagnosis as the smears were hemorrhagic on repeated aspirates.

## CONCLUSION:

FNAC can serve as rapid cost effective and valuable diagnostic tool which can help in segregating the benign from malignant cases and HCC from metastatic carcinoma cases. Correlation with clinical, pathological and radiological findings may further aid in accurate diagnosis of the lesion and minimizing the biopsy procedure which is more traumatic with risk of hemorrhage.

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Cite this article as: Valecha J, Kumar N, Ojha S: Spectrum of Lesions in Ultrasound guided FNAC of Liver Lesions. *PJSR* ;2018;11(1):62-65.  
Source of Support : Nil, Conflict of Interest: None declared.