# Role of USG guided FNAC in case of hepatic mass lesions

Bhagat Vasudha M[1], Modi Heta S[2], Shah Pinal C[3], Patel Chandni B[4]

## ABSTRACT

**Introduction:** The liver is a common site of hematogenous metastasis from gastrointestinal malignancies as well as extra intestinal cancers. Among primary, Hepatocellular carcinoma (HCC) is the most common. Liver is the third most common cause of death among individual between 25 and 59 years. The FNAC is an important useful diagnostic tool in combination with USG to make a clear difference between primary and metastatic carcinoma. On the basis of this management of these lesions differ. **Aims & objectives:** To study role of USG guided FNAC to differentiate benign from malignant liver lesions and hepatocellular carcinoma from metastatic carcinoma. **Methods and Material:** Under USG guidance, with aseptic precaution FNAC was performed with the use of 22-23 gauge spinal needle after satisfactory coagulation profile in Department of Pathology, GMC Surat from Jan-2014 to Dec-2014. Material aspirated on FNAC was spread on slides. Slides were stained with Hematoxylin & Eosin, MGG and PAP method after proper fixation. **Results:** Out of 30 reported cases age ranges from 30 years to 85 years. Of these, 26 cases were conclusive and four were inconclusive. Among 26 conclusive cases three were benign. Among remaining 23 malignant cases one case was of sarcoma and 22 of carcinoma. Among these 22 cases, six cases of HCC , 13 of adenocarcinoma and three poorly differentiated carcinoma. **Conclusion:** USG guided FNAC is very useful tool in establishing diagnosis of hepatic lesions as the procedure is simple, safe, minimally invasive.

**Key words:** Hepatocellular carcinoma, metastatic adenocarcinoma, USG guided FNAC

[1]AdditionalProfessor, [2]Resident doctor, [3]Assitant Professor, [4]Tutor
Department of Pathology, Government Medical College, Surat, Gujarat, India
Corresponding author mail: drpinalshah@gmail.com, hetamodi88@gmail.com

Conflict of interest: Nil

## INTRODUCTION

Liver is involved in many nonneoplastic and neoplastic diseases. The diagnosis and management of various hepatic mass lesion is a common clinical problem. Liver disease is the third most

common [1] cause of death among individual between 25 and 59 years.[2] The appropriate clinical management such as radical surgery or chemotherapy depends on accurate diagnosis.

FNAC has now been emerged as simple, safe, cost effective, rapid and minimally invasive method for cytopathological evaluation of liver lesions.

**AIMS & OBJECTIVES:** To study role of USG guided FNAC to differentiate benign from malignant liver lesions and hepatocellular carcinoma from metastatic carcinoma. On the basis of this management of these lesions differ.

**MATERIALS AND METHOD**

USG guide FNAC was carried out in 30 patients of hepatic mass lesion detected clinically and radiologically after normal prothrombin time at NCHS over a period of one year from Jan-2014 to Dec-2014.Aspirates were obtained with aseptic precaution using 22-23 gauge spinal needle attached to ten ml syringe and smears were made as quickly as possible. Some smears were air dried for MayGrunwald Giemsa stain and rest were fixed in 95% alcohol for Papanicolaou & Hematoxylin & Eosin stain. The blood clots fixed in ten percent formalin were also made whenever possible.

**OBSERVATION AND RESULTS:**

A total of 30 cases were aspirated during this duration of one year and studied. Age group ranged from 30 to 85 years with maximum cases lying between 40 to 70 years. There were 14 males and 16 females. The patients' main complaints were pain in right upper quadrant of abdomen, anorexia, weight loss, abdominal mass and hepatomegaly. Some also presented with ascites, abdominal distension, pruritus, jaundice and fever. Time period of complaints vary from one week to six months.

After study results were categorized as mentioned in Table 1. Thus, finally 26 cases were conclusive giving diagnostic yield of 86.6%. Out of 26 cases, three (11.53%) cases were benign, of liver cell dysplasia. Out of 23 malignancies six (23.07%) were of primary malignant lesion that is hepatocellular carcinoma, 14(53.82%) were of metastatic tumors and three(11.53%) were poorly differentiated carcinoma.

The most common metastasic tumor to liver included nine cases of metastatic

adenocarcinoma(34.61%), followed by two of metastatic neuroendocrine carcinoma(7.69%), one each of metastatic renal cell carcinoma(3.84%) , metastatic adenosquamous carcinoma (3.84%)and metastatic gastrointestinal stromal tumor(3.84%).

In only four cases follow up histological data were available which confirmed one each case of hepatocellular carcinoma, metastatic adenocarcinoma and metastasis from gastrointestinal stromal tumor. In one case biopsy was inadequate.

**Table 1:** Percentage of each entity diagnosed

| Diagnosis | NO. of cases | Percentage (%) |
|---|---|---|
| Metastatic adenocarcinoma | 9 | 34.61 |
| Metastatic renal cell carcinoma | 1 | 3.84 |
| Metastatic neuroendocrine carcinoma | 2 | 7.69 |
| Metastatic adenosquamous carcinoma | 1 | 3.84 |
| HCC-Hepatocellularcarcinoma | 6 | 23.07 |
| Poorly differentiated Carcinoma | 3 | 11.53 |
| Sarcoma-GIST | 1 | 3.84 |
| Benign | 3 | 11.53 |

## DISCUSSION

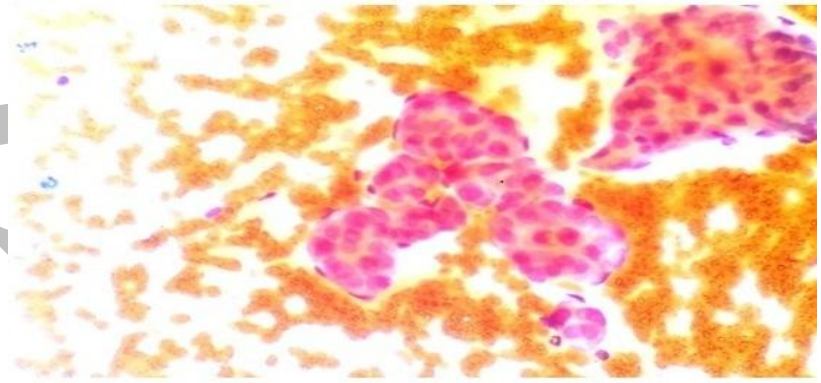
FNAC is very useful procedure for diagnosis of various hepatic lesions. It offers accuracy without major complication and minimal intervention at low cost.[3] The patients' main complaints were pain in right upper quadrant of abdomen, anorexia, weight loss, abdominal mass and hepatomegaly. Some also presented with ascites, abdominal distension, pruritus ,jaundice and fever. Time period of complaints vary from one week to six months. Exact management of hepatic lesions is a common clinical problem and their appropriate management depends on accurate diagnosis.[4]

On imaging techniques the appearances are often nonspecific. There is

some overlap between features of liver abscess, HCC and metastasis. So, USG guided FNA plays an important role which has been reported to be safe, useful and accurate technique for making cytological diagnosis of hepatic masses.[5] It is used mainly for diagnosing hepatic malignancy primary or metastatic.[6]

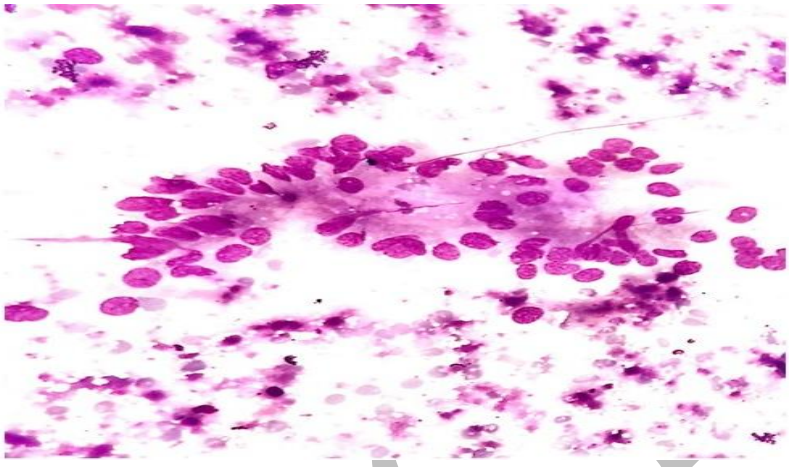
FNAC has replaced conventional core needle biopsy to a large extent in diagnosis of focal lesion as multiple passes can be given to the patient in outdoor patient department.[7] Cytology was helpful in diagnosing liver lesions successfully in 86.6% of cases which is comparable to study done by Franca et al.[8] Das et al [9] reported role of USG guided FNAC in diagnosis and classification of liver malignancies and concluded that FNAC played an important role in diagnosis and classification of liver malignancies.

Most common malignant lesion of primary origin was HCC in our study. Cytomorphologically it can be differentiated from other lesions of liver by different features like cellularity, trabecular pattern, endothelial wrapping, transgression of vessels ,hyperchromasia, N/C ratio and cohesiveness of cells, nuclear shape and size, location, multinucleation, intranuclear inclusions, prominent nucleolus, amount of cytoplasm, vacuolation, bile production. The most important and helpful cytological features were trabecular pattern, irregularly granular chromatin and multiple nucleoli as were described by Cohen et al. [10]



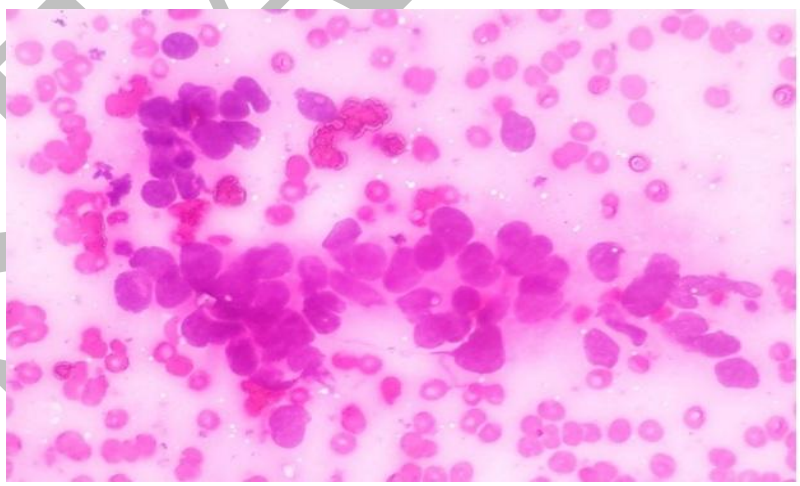
**Endothelial wrapping in Hepatocellular carcinoma(H&E stain,40X)**

In our study metastasis exceed primary cases. Among the metastatic lesions adenocarcinoma were most common diagnosed secondaries which showed glandular or acinar pattern, palisaded rows, intra and extra cytoplasmic mucin and necrotic background.[11]



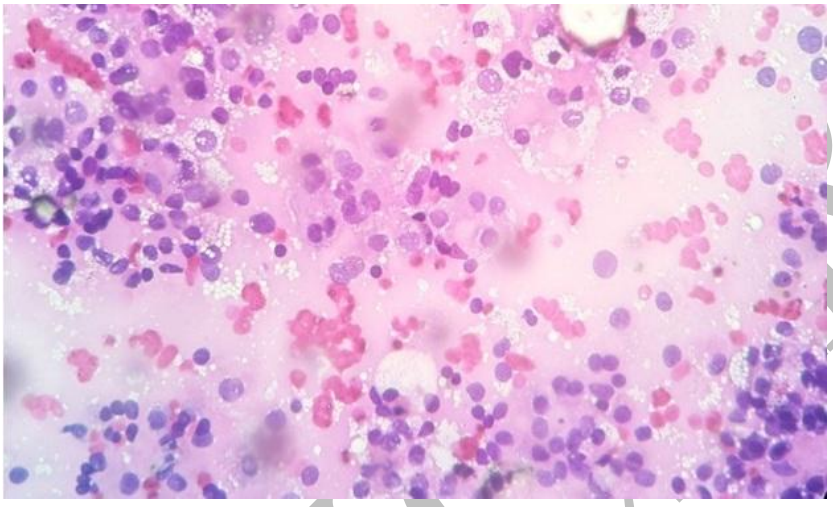
**Acinar arrangement in dirty necrotic background in metastatic adenocarcinoma(MGG,40X)**

Neuroendocrine tumors show round nuclei with fine homogenous chromatin, nuclear moulding and streaking artifact.



**Nuclear moulding in metastatic neuroendocrine carcinoma(H&E,40X)**

Metastatic renal cell carcinoma show round to polygonal cell with central/eccentrically placed round small nuclei, cytoplasmic clearing, cytoplasmic eosin hyaline globules and transgression of vessels.



**Clear vacuolated cytoplasm in metastatic renal cell carcinoma (MGG stain,40X)**

High cellular smears comprising dual cell population of round/ovoid cell and plump spindle cell ,arranged in loose clusters and scattered singly attached to arborizing matrix material were found in case of sarcoma which was found later on Metastatic Gastro Intestinal Stromal Tumor confirmed histologically.

## CONCLUSION

USG guided FNA of liver is being increasingly accepted as valuable diagnostic tool that is simple, safe, highly representative and cost effective. It gives rapid diagnosis with high accuracy and acts as a substitute to core biopsy in diagnosis and subtyping of hepatic lesions. The appropriate clinical management such as radical surgery or chemotherapy can be decided upon based on this diagnosis.

**REFERENCES**

1. Haque S,Riaz s. To evaluate the role of Fine Needle Aspiration Cytology in the diagnosis of liver malignancy including hepatocellular carcinoma. Pak J med Health Sci; 2012:6(1)32-39
2. Tao LC, Donat EE, Ho CS, Mchoughlin MJ. Evans WK. Cytologic diagnosis of hepatocellular carcinoma by fine needle aspiration biopsy. Cancer 1984;53:547-52
3. Kuo FY, Chen WJ, Lu SN, Wang JH, Eng HL. Fine needle aspiration cytodiagnosis of liver tumors. Acta Cytol 2004;48:142-48
4. Ahuja A, Gupta N, Srinivasan R, Kalra N, Chawla Y, Rajwanshi A. Differentiation of hepatocellular carcinoma fom metastatic carcinoma of the liver-clinical and cytological features. J cytol 2007;24(3):125-29
5. Shah A, Jan GM. Fine needle aspiration cytology of liver. A study of 518 cases. J cytol 2002;19:139-43
6. Whitlach S, Nunez C, Pitlik DA. Fine needle aspiration of liver. A study of 102 consecutive cases. Acta cytol 1984;28:719-25
7. Yousaf NW, Jafri S, Massod G, Malik SA. The diagnostic role of fine needle aspiration cytology of liver in malignant focal mass lesion: A cytological correlation. JCPSP 2000;10:109-12.
8. Franca AV, Valerio Hm, Trevisan M et al. fine needle aspiration biopsy for improving the diagnostic accuracy of cut needle biopsy of focal liver lesions. Acta Cytol. 2003;47:332-6
9. Das DK, Tripathy RP, Kumar N, et al. Role of guided fine needle aspiration cytology in diagnosis and classification of liver malignancies. Trop Gastroenterol 1997;18:101-06
10. Cohen MB, HaberMM, Holley EA, Ahm DK, Bottus K, Sitoloff AC. Cytologic criteria to distinguish hepatocellular carcinoma from non-neoplastic liver. Am J Clin Pathol 1991;95:125-30
11. Jitendra G. Kasit, Viren Patel Biren Parikh et al. Fine needle aspiration cytology and biopsy in hepatic masses: A minimally invasive diagnostic approach, Clinical cancer

Investigation Journal,2013:2(2),132-142

**Abbreviation**

USG- Ultra sonography

FNAC- Fine Needle Aspiration Cytology

MGG- May Grunwald Giemsa

PAP- Papanicolaou

HCC- Hepatocellular Carcinoma

HE- Hematoxylin & Eosin

GIST- Gastro intestinal stromal tumor