MAK HILL Publications Research Journal of Medical Sciences

Research Article
doi: 10.36478/makrjms.2024.9.408.412

# FNCB as a Method in Diagnosis of the Primary and Secondary Malignancies and Non-Neoplastic Conditions of the Liver

[1]Manikanta Swamy Marisetty, [2]Sarojini Naidu Tamanara and [3]Thurlapati Satya Prakash Venkatachalam

*[1-3]Department of Pathology, GSL Medical College, Raja Mahendravaram, Andhra Pradesh, India*

OPEN ACCESS

**Key Words**
FNCB, non-neoplastic conditions of the liver, MDHCC

**Corresponding Author**
Manikanta Swamy Marisetty, Department of Pathology, GSL Medical College, Raja mahendravaram, Andhra Pradesh, India

**Author Designation**
[1,2]Assistant Professor
[3]Professor and Head

**Received:** 20 June 2024
**Accepted:** 21 August 2024
**Published:** 22 August 2024

**Citation:** Manikanta Swamy Marisetty, Sarojini Naidu Tamanara and Thurlapati Satya Prakash Venkatachalam, 2024. FNCB as a Method in Diagnosis of the Primary and Secondary Malignancies and Non-Neoplastic Conditions of the Liver. Res. J. Med. Sci., 18: 408-412, doi: 10.36478/makrjms.2024.9.408.412



**ABSTRACT**
FNAC or FNCB is a rapid, accurate and safe diagnostic procedure that can be used in diagnosing various neoplastic and non neoplastic diseases of the liver. The advent of newer modalities possessing the ability of providing cross sectional anatomy, namely computed tomography (CT) and USG have revolutionized the guidance for FNAC(Fine needle aspiration cytology and FNCB(Fine needle core biopsy). During the study period, a total number of 93 cases were studied. Study was performed on admitted and OP and IP patients in whom hepatic mass was confirmed by radiological examination. All cases where lesion/pathology in the liver was suspected cases were taken for study. After obtaining the detailed clinical and radiological data, the patient was subjected to FNAC/FNCB under Ultrasound or CT guidance. The consent of the patient was taken before under taking the procedure. Out of these 93 cases 51 (54%) cases underwent FNAC of liver lesions whereas 42 (46%) cases underwent core needle biopsies. Out of 42 cases which were subjected to FNCB, 07 were diagnosed as non-neoplastic and 33 cases as neoplastic respectively and 02 case were opined as normal liver cytology. Histological diagnosis of MDHCC (moderately differentiated hepatocellular carcinoma) was showing tumor cells are large polygonal with prominent nuclei some of them showing prominent nucleoli, cytoplasm is ample dense eosinophilic granular. Occasional bizarre mono and multinucleated giant cells with a desmoplastic stroma. Ultrasound or CT guided FNAC / FNCB (core biopsy) of liver permits the categorization of more frequent non-neoplastic lesions and neoplastic primary and secondary metastatic malignancies in a simple and rational manner which is helpful for the management of hepatic lesions.

## INTRODUCTION

Liver is the second largest organ in the body and the largest gland and weighs about 1-1.5 kg. It is divided into four lobes viz. right, left, caudate and quadrate lobes by the surface peritoneal and ligamentous attachments. It is covered by visceral peritoneum, called Glisson's capsule, all around except at the vortex where it is lacking and this area is known as the bare area of the liver[1].

Aspirates from normal liver contain hepatocytes, bile duct epithelial cells, sinusoidal endothelial cells, Kupffer cells, few mononuclear cells and fibroblasts.

Hepatocytes appear as tissue fragments, monolayered sheets, clusters and as single cells and are characterized by round to polygonal shape with well-demarcated cellular contours and central or eccentric round nuclei and finely granular chromatin and one to two distinct prominent nucleoli. Nucleoli stain deep red with Papanicolaou (Pap) staining. Binucleation and anisonucleosis (a variation in size, but not the shape of nuclei) is normal with abundant granular cytoplasm, so that the cells have low N: C ratios. Single or multiple, small lipid or glycogen vacuoles may be found in some hepatocytes[2].

Hepatocyte nuclei stripped of their cytoplasm and cytoplasmic intranuclear invaginations may be seen in the benign liver aspirate and are not, diagnostic of hepatoma[3-4].

Histologically adenomas are composed of benign appearing hepatocytes arranged in plates of one or two cell thickness, portal tracts are absent. FNAC smears show a single population of benign hepatocytes arranged in small to large groups and in singles. The nuclei are uniform without prominent nucleoli and cytoplasm is abundant[5-6].

HCC is a malignant tumor derived from hepatocytes. Histologically, HCC consists of tumor cells that resemble normal hepatocytes. The stroma is composed of sinusoid-like spaces lined by single layer of endothelial cells. The different architectural patterns of HCC are trabecular (plate like, sinusoidal) pseudo glandular (acinar), compact (solid) and scirrhous[7-8].

## MATERIALS AND METHODS

During the study period, a total number of 93 cases were studied. Study was performed on admitted and OP and IP patients in whom hepatic mass was confirmed by radiological examination. All cases where lesion/pathology in the liver was suspected cases were taken for study.

After obtaining the detailed clinical and radiological data, the patient was subjected to FNAC / FNCB under Ultrasound or CT guidance. The consent of the patient was taken before under taking the procedure.

**Sample Selection:** All cases where lesion/pathology in the liver was suspected cases were selected for study.

**Type of Study:** A Hospital based cross sectional study.

**Inclusion Criteria:**

- All the diagnosed patients with liver mass lesions who have consented to undergo image guided FNAC or FNCB for pathological evaluation were included.

**Exclusion Criteria:**

- Patients having contraindications like deranged coagulation profile FNAC/FNCB were excluded.
- FNAC or FNCB having insufficient material for interpretation were excluded.

## RESULTS AND DISCUSSIONS

Out of 42 cases which were subjected to FNCB (Fine needle core biopsy), 07 were diagnosed as

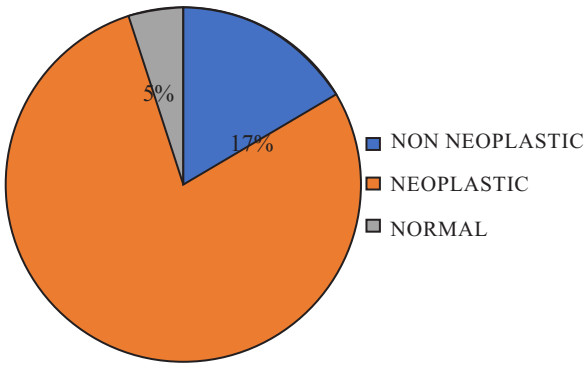


Fig. 1: Breakup of histopathological diagnoses of FNCB

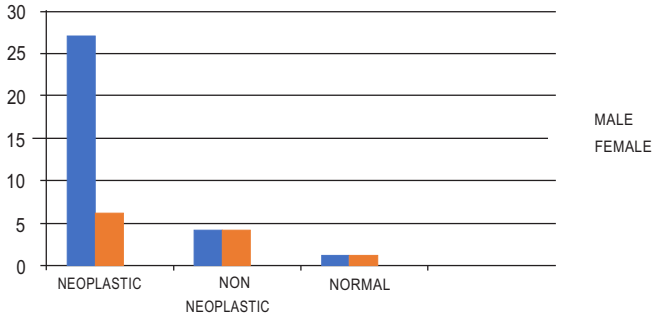


Fig. 2: Sex wise distribution of benign and malignant lesions of liver by FNCB

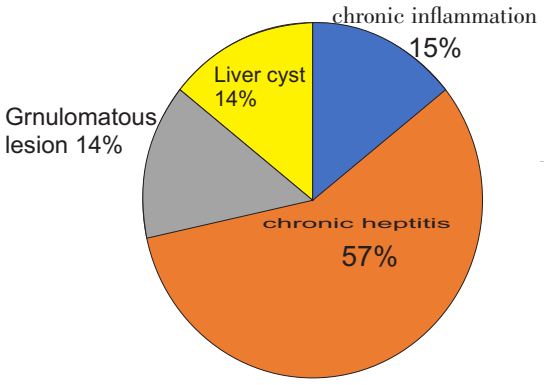


Fig. 3: Distribution of non-neoplastic lesions of FNAB

**Table 1:Lesion wise break up of fncbs on 42 liver sol cases**

| Diagnosis | No of cases | Percentage |
|---|---|---|
| Normal | 02 | 4 |
| Non neoplastic | 07 | 17 |
| Chronic inflammation | 01 | 14.28 |
| Chronic hepatitis | 04 | 57.15 |
| Granulomatous lesion | 01 | 14.28 |
| Liver cyst | 01 | 14.28 |
| Neoplastic | 33 | 79 |
| Hepatocesllular carcinoma | 25 | 75.80 |
| Intrahepatic cholangiocarcinoma | 01 | 3.3 |
| Metastatic adenocarcinoma | 06 | 18.19 |
| Metastatic squamous cellcarcinoma | 01 | 3.3 |
| **Total** | **42** | **100** |

**Table 2: Histopathological diagnosis of neoplastic liver lesions by fncb**

| Neoplastic lesions | Number of cases | Percentage |
|---|---|---|
| Primary (HCC) | 26 | 79 |
| Well differentiated | 11 | 42 |
| Moderately differentiated | 11 | 42 |
| Poorly differentiated | 03 | 12 |
| Intrahepatic cholangiocarcinoma deposits | 01 | 04 |
| Secondaries | 07 | 21 |
| Metastatic adenocarcinoma | 05 | 71 |
| Metastatic squamous cell carcinoma | 01 | 14.5 |
| Anaplastic carcinoma from pancreas | 01 | 14.5 |

**Table3: Comparison of histopathological diagnoses of present study with the various studies**

| Histopathological diagnosis | Liat Appelbaum[10] (n=205) | Nasit[9] (n=150) | Present study(n=42) |
|---|---|---|---|
| Normal liver morphology | 01(0.4%) | - | 2 (5%) |
| **Non neoplastic lesions** | **25 (12.19%)** | **03 (2.0%)** | **07(17.5%)** |
| a. Hepatic abscess | 02 (8%) | 02(66.66%) | - |
| b. Cysts - | | 01(33.33%) | 01(14.28%) |
| c. Cirrhosis 08 (32%) | - | - | |
| d. Chronic inflammation | 05 (20%) | - | 01(14.28%) |
| e. Chronic hepatitis | 04 (16%) | - | 04(57.15%) |
| f. Granulomatous lesion | - | - | 01(14.28%) |
| g. Nodular hyperplasia | 05 (20%) | - | - |
| h. Focal steatosis | 01 (0.4%) | - | - |
| **Neoplastic** | **179 (87.31%)** | **147(98%)** | **33 (82.55)** |
| A. Benign | 03 (16.75%) | 05 (3.5%) | - |
| a. Hepatic adenoma | - | 03 (60%) | - |
| b. Hemangioma | 03 (16.75%) | 02 (40%) | - |
| B. Malignant | 176 (98.32%) | 142(96.5%) | 33(82.5%) |
| a. Hepatoblastoma | - | 01 (0.7%) | - |
| b. Hepatocellular carcinoma | 38 (21.59%) | 41(28.8%) | 25(75.80%) |
| c. Intrahepatic cholangiocarcinoma | 03 (17%) | - | 01 (3.3%) |
| d. Metastatic carcinomas | 128 (72.72%) | - | - |
| e. Metastatic adenocarcinoma | - | 75(52.8%) | 06(18.19%) |
| f. Metastatic Squamous cell carcinoma | - | 01 (0.7%) | 01 (3.35) |
| g. Small cell carcinoma | - | 10 (7.0%) | - |
| h. Poorly differentiated carcinoma | - | 08 (5.6%) | - |
| i. Carcinoid tumor | - | 03 (2.1%) | - |
| j. Malignant melanoma | - | 02 (1.4%) | - |
| k. Hodgkin's lymphoma | 07 (3.97%) | 01 (1.4%) | - |

non-neoplastic and 33 cases as neoplastic respectively and 02 case were opined as normal liver cytology.

The present study encountered 7 cases (17%) out of 42 cases by FNCB.

One case histologically was diagnosed as granulomatous lesions. The patient had moderate hepatomegaly. Ultrasound showed diffuse parenchymal lesion.

In the case of FNCB, section from liver biopsy showed central infarcted tissue with lymphoplasmacytic, histiocytic, eosinophilic infiltration with some foci of multiple granulomas made up of multinucleated giant cells and epithelioid cells.

One case histologically was diagnosed as chronic hepatitis. In the former, ultrasound showed ill-defined lesion measuring 3.5 x 3.0 cms and in the latter case, ultrasound show ill-defined lesion measuring 4.0 x 4.5 cm. The smears showed many regenerative hepatocytes characterized by anisokaryosis with bi and multinucleation. Some hepatocytes showed microvesicular steatosis and some showed nuclear vacuolation. In section of liver biopsy microvesicular steatosis and feathery degeneration of the hepatocytes with lymphocytic infiltration was seen Histologically, one case of polycystic liver disease was diagnosed which on USG showed multiple cysts in both lobes with the largest cyst measuring 3.0 x 4.0 cms. The cyst wall was made up of dense fibrocollagenous tissue and it was lined by single layered of flattened epithelium. Focal areas showed congested blood vessels and with areas of dense infiltration by eosinophils, neutrophils, lymphocytes and macrophages.

Histological diagnosis of well differentiated HCC show

thin plates (1-3 hepatocytes thickness), cells smaller than normal, abnormal reticulin network; minimal nuclear atypia, commonly fatty change and pseudo-glands. Out of the 11 cases diagnosed as HCC one case was diagnosed as clear cell variant features on FNCB and another one case was diagnosed as well differentiated carcinoma with trabecular pattern on FNCB showing trabecular and solid pattern of hepatocyte arrangement, with few nuclei showing spindle cell pattern.

Histological diagnosis of MDHCC was showing tumor cells are large polygonal with prominent nuclei some of them showing prominent nucleoli cytoplasm is ample dense eosinophilic granular. Occasional bizarre mono and multinucleated giant cells with a desmoplastic stroma.

Nasit[9] did 150 liver fine needle core biopsies (FNCBs). The results of their study included 3 cases (2.0%) of non-neoplastic lesions out of which 2 cases (66.66%) were abscesses and one case (33.33%) was a cyst. In the present study, out of the 42 cases that were subjected to FNCB, there were 7 (17.5%) non neoplastic lesions which included 1 case (14.28%) of cyst, 1 case (14.28%) of chronic hepatitis, 1 case (14.28%) granulomatous lesion and 4 cases (57.15%) of chronic hepatitis. Two cases (5%) that were suspected to be malignant tumors were concluded as normal liver morphology.

Nasit[9] encountered 5 cases (3.5%) of benign tumors out of these 150 FNCBs that included 3 cases (60%) of hepatic adenomas and 2 cases (40%) of hemangiomas. In the present study no benign lesions were found. In the same study 142 cases were found to be malignant neoplastic tumors out of 150 fine needle core biopsies (FNCBs) in which 1 (0.7%) case was a hepatoblastoma, 41 (28.7%) cases were hepatocellular carcinomas, 75 (52.8%) cases were metastatic adenocarcinomas, 01 (0.7%) case was metastatic squamous cell carcinoma deposits, 10 (7.0%) cases were of small cell carcinoma deposits, 08 (5.6%) cases were poorly differentiated carcinoma, 03 (2.1%) cases were carcinoid tumors, 02 (1.4%) cases were malignant melanomas and 01 (0.7%) case was Hodgkin's lymphoma[10]. In present study 33 cases out of 42 FNCBs were diagnosed as malignant tumors of which 25 (75.80%) cases were of HCCs, 01 (3.3%) case was an intrahepatic cholangiocarcinoma, 06 (18.19%) cases were of metastatic adenocarcinomas deposits and 01 (3.3%) was a metastatic squamous cell carcinoma deposit.

In both the studies neoplastic lesions were found to be more common than non-neoplastic lesions and malignant lesions were more common among neoplastic lesions. However in comparison, our results were contrasting as we have encountered more number of primary malignant neoplasms, mostly HCCs than secondaries.

## CONCLUSION

Ultrasound or CT guided FNAC / CB (core biopsy) of liver permits the categorization of more frequent non-neoplastic lesions and neoplastic primary and secondary metastatic malignancies in a simple and rational manner which is helpful for the management of hepatic lesions.

Ultrasound / CT through may not be correct all the time in pin pointing the diagnosis, but their guidance is an effective adjunct for FNAC and FNCB in reaching the target lesion precisely and in obtaining the representative sample and thus play the second fiddle to FNAC / FNCB which after all are the GOLD STANDARD for diagnosis.

## REFERENCES


1. Junqueira, L.C. and J. Carneior, 2000. Organs Associated with the Digestive Tract. In: Basic Histology Text and Atlas., Junqueira, L.C. and J. Carneior, (Eds.)., McGraw-Hill companies, U.S.A, ISBN-17: 978-3-319-41873-5, pp: 317-339.
2. Young, B. and J.W. Health, 2000. Liver and Pancreas. In: Wheater's Functional Histopathology-a Text and Colours Atlas., Young, B. and J.W. Health, (Eds.)., Churchill Living Stone, Edinburgh, ISBN-14: 978-0702047473, pp: 274-281.
3. Wilson, S.R. and C.E. Withers, 2005. The Liver. In: Diagnostic Ultrasound., Rumack, C.M., S.R. Wilson and J.W. Charbonneau, (Eds.)., Elsevier Mosby, Maryland Heights, Missouri, ISBN-14: 978-0781723909, pp: 77-145.
4. Tao, L.C. and M. Bibbo, 1997. Comphrehensive Cytopathology In: Comphrehensive Cytopathology, Tao, L.C. and M. Bibbo, (Eds.)., WB Saunders Company, Phiiladelphia, ISBN-14: 978-1455751952, pp: 827-863.
5. Swamy, C.M., C. Arathi and C. Kodandaswamy, 2011. Value of ultrasonography-guided fine needle aspiration cytology in the investigative sequence of hepatic lesions with an emphasis on hepatocellular carcinoma. J. Cytology, 28: 178-184.
6. Chhieng, D.C., 2004. Fine needle aspiration biopsy of liver-An update. World J Surg Oncol, Vol. 2, No. 5.
7. Wee, A., 2005. Fine needle aspiration biopsy of the liver : Algorithmic approach and current issues in the diagnosis of hepatocellular carcinoma. Cyto Jour., Vol. 2, No. 7 .10.1186/1742-6413-2-7.
8. Nazir, R.T., M.A. Sharif, M. Iqbal and M.S. Amin, 2010. Diagnostic accuracy of ?ne needle aspiration cytology in hepatic tumours. J Coll Phy Surg Pak., 20: 373-376.
9. McGahan, J.P., J. Bishop, J. Webb, L. Howell, N. Torok, R. Lamba and M.T. Corwin, 2013. Role of

fna and core biopsy of primary and metastatic liver disease. Int. J. Hep., 2013: 174-103.

10. Liat A.M.D., A.K.M.D Robert, B.K.M.D. Jonathan, R.M.D. Janet and S.M.D. Jacob, 2005. Focal hepatic lesions: US-guided Biopsy-Lessons Review of cytologic and pathological examination safety and efficacy of percutaneous CT-guided liver biopsy using and 18-guage automated needle. Eur. J Intern Med., 16: 571-574.