



Ultrasonography-Guided Fine Needle Aspiration Cytology of Hepatic Lesions With an Emphasis on Hepatocellular Tumours

KEYWORDS

Benign, Liver, Malignant, Non-neoplastic, Ultra Sonography Guided Fine Needle Aspiration cytology

* Dr. Priyanka Agnihotri

Dr. Ajay Yadav

Resident, S.M.S. Medical College, Jaipur, Rajasthan, India * Corresponding author

Professor & Head Of Department, Department of Pathology, SMS Medical College & Hospital, Jaipur, Rajasthan, India

ABSTRACT Non-neoplastic and neoplastic diseases involving liver pose a common clinical problem in their evaluation and management. Fine needle aspiration cytology of hepatic lesions done under ultrasonographic guidance help us immensely in reaching a definitive diagnosis for proper management and its planning.

Methods: Ultra Sonography Guided Fine Needle Aspiration cytology was carried out on 386 cases at SMS Medical College, Jaipur from January 2014 to September 2015 which was represented by 39.12% female & 60.88% male patients

Results: Total of 386 cases were studied for cytomorphological features and categorized into benign (3 cases), malignant (383 cases) and further into primary (88 cases) and metastatic (295 cases). Most of the cases studied yielded cytomorphological features good enough to differentiate benign and malignant. Also it was possible to divide cases into primary and metastatic. Thus, providing worthy information for planning further management and ancillary investigations for patients.

INTRODUCTION

With the rare exception of acute hepatic failure, liver disease is an insidious process in which clinical detection and symptoms of hepatic decompensation may occur weeks, months, or many years after the onset of injury.¹ The differential diagnosis of hepatic mass lesions includes primary liver tumors (benign or malignant), metastatic deposits, congenital and acquired cysts, abscesses and granulomas.² USG allows real-time visualization of the needle tip as it moves towards the lesion, which makes biopsy of smaller lesions and lesions in uncooperative easier. If a lesion can be imaged, then USG-guided Fine needle aspiration is an efficient & cost effective technique. The portability, ease of use and relative speed of ultrasound make it a favourable modality for guided biopsy procedures, particularly for superficial and moderately deep lesions.³

MATERIAL & METHODS

Study design : A prospective study of USG –Guided Fine needle aspiration of hepatic lesions was carried out. Patients with clinical, biochemical or radiographic evidence of hepatic lesions with normal prothrombin time index were included during study period from January 2014 to September 2015.

Material was aspirated under ultrasonographic guidance using 22 gauge needle attached to standard 20cc plastic disposable syringe. At least four to six smears are prepared. Slides intended for routine Haematoxylin and eosin (H&E) staining are wet – fixed in 95% ethanol for a minimum of 15 minutes and those air dried are stained with May Grünwald Giemsa (MGG) stain. Total of 386 cases were studied for cytomorphological features and categorized into benign (3 cases), malignant (383 cases) and further into primary (88 cases) and metastatic (295 cases).

Results: Age Analysis of patients was considered in four age groups between 0 years to 85 years with time gap of 25 yrs for first group from 0 to 25 and others with 20 years gap from 26 to 45, 46 to 65 and 66 to 85 years

which reflects higher percentage of 56.74% in 3rd group & 20.73% in 2nd & 4th group while first group comprised only 1.81%. Out of 386 patients, diagnosis was rendered in 3 patients (0.78%) as Non-neoplastic lesions and 383 patients (99.22%) as neoplastic with Primary neoplasm findings (22.80%) & rest secondary/metastatic neoplasm (76.42%). (Table 1)

87 patients were evaluated as Hepatocellular Carcinoma out of 386 cases of which 37 cases represented moderately differentiated (42.53%), 36 cases well differentiated (41.38%) and 14 cases poorly differentiated (16.09%) only. (Table 2)

On the other hand secondary neoplasms were 295 cases (76.62%) among which metastatic adenocarcinoma accounted for most 197 (51.04%) cases, metastatic cholangiocarcinoma accounted for least 2 (0.52%) cases, metastatic poorly differentiated carcinoma accounted for 43 (11.14%) cases, metastatic small cell carcinoma 18 (4.66%) cases, metastatic squamous cell carcinoma 12 (3.11%) cases, metastatic round cell neoplasm 8 (2.07%) cases, metastatic neuro-endocrine carcinoma 7 (1.81%) cases, and lastly metastatic non-hodgkin's lymphoma & metastatic malignant melanoma accounted for 4 (1.04%) cases. (Table 3)

	No. of Cases	Percentage
Non-neoplastic	3	0.78%
Metastatic neoplasm	295	76.42%
Primary neoplasm	88	22.80%

Table 2: DIFFERENTIATION GRADES OF HEPATOCELLULAR CARCINOMA

Grades Of Hepatocellular Carcinoma	No. of cases	Percentage
Moderately differentiated	37	42.53%
Poorly differentiated	14	16.09%
Well differentiated	36	41.38%
Total	87	100.00%

Table 3 : DIAGNOSTIC DETAILS OF METASTATIC NEOPLASMS

Cytological Diagnosis of Secondary Neoplasms	No. of cases	Percentage
Metastatic Poorly Differentiated Carcinoma	43	11.14%
Metastatic Adenocarcinoma	197	51.04%
Metastatic Cholangiocarcinoma	2	0.52%
Metastatic Malignant Melanoma	4	1.04%
Metastatic Neuroendocrine Carcinoma	7	1.81%
Metastatic Non Hodgkin's Lymphoma	4	1.04%
Metastatic Round Cell Neoplasm	8	2.07%
Metastatic Small Cell Carcinoma	18	4.66%
Metastatic Squamous Cell Carcinoma	12	3.11%

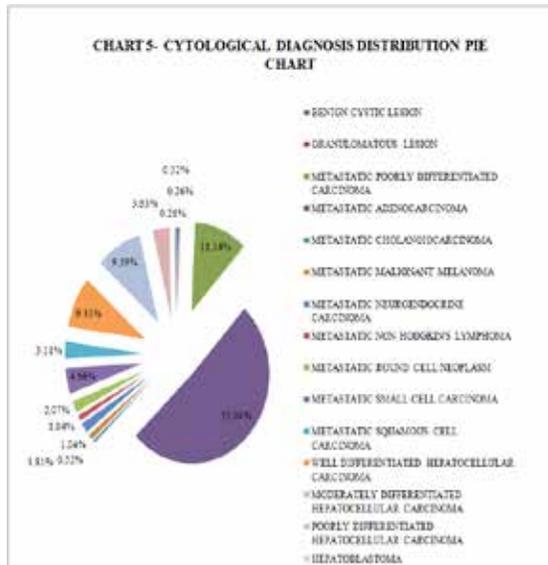


Figure 1 show various cytological diagnoses given on basis of smears prepared on fine needle aspiration cytology of hepatic lesions under ultrasonographic guidance of total 386 cases.

DISCUSSION

Day by day as we are moving on to a less invasive yet more informative diagnostic means, fine needle aspiration cytology has placed itself in the list of one of the most important tools in ascertaining the diagnosis of lesions and is of great help in guiding the further management protocol. In the present study, cytological smears obtained from 386 cases of hepatic lesions under ultrasound guidance were studied for interpretation. Proportion and percentage distribution of age, sex, various neoplastic (primary as well as secondary) and non-neoplastic lesions were interpreted.

The mean age in the present study was 42.71years and gender distribution depicted a male preponderance. In the present study 386 cases of representative samples obtained from patients with space –occupying lesions of liver obtained by fine needle aspiration cytology under ultrasound guidance were studied for interpretations. Of these benign / non-neoplastic aspirates were least common aspirates that is only 3 (0.78%) cases out of 386 were non-neoplastic. On categorizing neoplastic lesions as primary and secondary, metastatic neoplasm, occupied the commonest group 295 (76.42%) cases out of 386 cases with primary hepatic neoplasm concluded in 88 (22.80%) cases. Primary hepatocellular tumours in the present study included predominantly Hepatocellular carcinoma 87 cases (Figure2)out of total 386 cases. Single case of hepatoblastoma(Figure 4), a rare paediatric hepatic neoplasm(1 out of 386 cases) was diagnosed in the present study. In the present study metastatic adenocarcinomas (Figure 3)constituted the commonest of all secondary neoplasms in liver. Second most common group was of metastatic poorly differentiated carcinomas (43 cases). Rare metastatic neoplasms in the present included metastatic malignant melanoma(4 cases) and metastatic round cell neoplasm(8 cases).



Figure 2 : H&E stained (1000x) smear demonstrating macronucleoli and intranuclear cytoplasmic inclusions in Hepatocellular Carcinoma

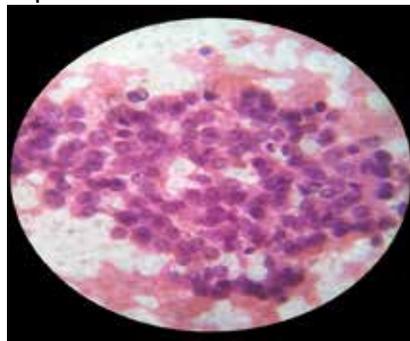


Figure 3 : H&E stained (1000x) smear of a case of Metastatic Adenocarcinoma depicting features such as round nuclei with prominent nucleoli

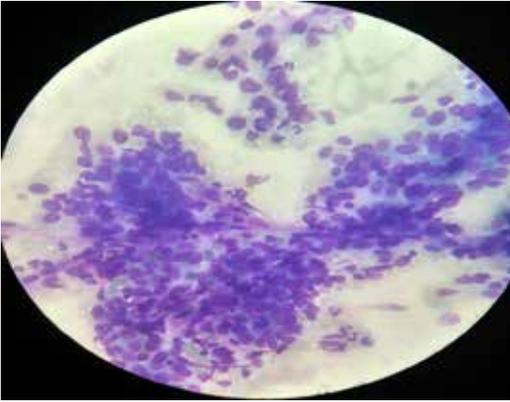


Figure 4 : MGG stained (400x) smear showing endothelial cells transgressing through clusters of pleomorphic cells with high N:C ratio seen in hepatoblastoma

CONCLUSION

Ultrasonography guided Fine needle aspiration technique is simple and rapid technique for a provisional diagnosis of hepatic lesions. With proper collaboration between clinicians, radiologists and pathologists, it is an indispensable tool for proper management and appropriate planning of surgery.

REFERENCES

1. Neil D. Theise. Liver and Gallbladder. In Robbins & Cotran Pathologic Basis of Disease. South Asia ed., New Delhi: Saunders 2015, pp.822
2. Leiman G. Liver and Spleen. In: Orell SR, Sterret GF, Whitaker D, editors. Fine needle aspiration cytology. 4th ed. New Delhi: Churchill Livingstone; 2005, pp.293–316.
3. Suzanne Le P Langlois and Steve Chryssidis. Imaging methods for guidance of aspiration cytology In: Orell SR, Sterret GF, Whitaker D, editors. Fine needle aspiration cytology. 5th ed. New Delhi: Churchill Livingstone; 2012, pp.28–37.