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Spectrum of Hepatic Lesions in A Tertiary Health Care Centre

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ABSTRACT

Introduction

Modern imaging guided Fine Needle Aspiration Cytology (FNAC) is a rapid, accurate, minimally invasive and less expensive diagnostic technique for inaccessible space occupying liver lesions(SOL).It is very important to categorize the type of lesions, whether primary or metastatic and probable site of primary has to be commented. Appropriate clinical management requires accurate diagnosis.

Aim

The aim of the current study is to determine the spectrum of hepatic lesions and cytomorphological features in imaging guided FNAC of hepatic lesions.

Material and Methods

This is a retrospective study. Data collected from June 2021-June23.Total 104 cases were included in this study. All guided FNACs from suspected hepatic SOL were included in this study.

Result

Basedon cytomorphological features. Out of 104 Liver SOLs 85 cases were malignant 16were benign. Amongst malignant lesions majority of the cases were metastatic carcinomas(69cases),while 16cases were hepatocellular carcinomas (HCC), 2 were suspicious

and 1case was inconclusive(Not possible to differentiate between HCC and metastasis).

Conclusion

Guided FNAC is a precise and cost effective diagnostic tool which helps in differentiating benign and malignant cases, primary and metastatic carcinoma. 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. It aids in triage the patients and decides further line of management.

Keywords

Hepatic lesions, cytomorphologic feature, FNAC-Fine needle aspiration cytology.

INTRODUCTION

Ultrasound guided FNAC is very safe for accurate diagnosis and for early clinical management with minimal risk of complication and with minimal trauma[1].To categorization of liver lesions is very important whether inflammatory or benign or malignant and if malignant whether primary or metastatic[2].Categorization of Metastatic tumor type is also necessary for early treatment .Malignant liver lesions are very aggressive and liver transplant and hepatectomy in the only treatment of choice rather chemotherapy which has very limited use[3].

AIM

The aim of the present study is to determine the wide spectrum of neoplastic and non-neoplastic hepatic lesions and to describe their cytomorphological features at the tertiary care centre Viswabharathi medical college, Kurnool, Andhra Pradesh.

MATERIALS AND METHODS

This is a retrospective observational study. Data collected from June 2021 to June 23.Total 104 cases were included in this study. All guided FNACs from suspected hepatic SOL were included in this study. Data were retrieved from the archived records of cytopathology departmental.

Inclusion Criteria

All cases with suspected liver lesion /SOL were included in this study .

Exclusion Criteria

Lesions with no clear demarcation from the adjacent anatomical structures were excluded from this study

Cytopathology request forms were documented for PT/INR , complete clinical history with symptoms and prior existing liver disease and known primary from other site , AFP and HBS Ag status .

Guided FNAC was performed with the help of lumber puncture needle of 23 G with attached 10 cc syringe. Needle was inserted percutaneously by the radiologist under ultrasound guidance using all aseptic precaution .Sample collected from the hub of the syringe and smears were prepared by trained cytopathology technician. Further few slides were fixed immediately in to 95 % Isopropyl alcohol and few were kept dry . Fixed smears were stained with Hematoxylin and Eosin Staining and Papanicolaou stains. Dry smears were stained with Giemsa stain .Stained smear were seen under microscope by the Pathologist for Cytomorphology .Other biochemical parameters like serum HBS Ag and Alfa fetoprotein and radiological findings were also correlated whenever needed.

RESULTS

Cytomorphological features were evaluated and out of 104 Liver SOLs 85 cases were malignant 16were benign (**Table -1)**. Amongst malignant lesions majority of the cases were metastatic carcinomas

(68cases),while 16cases were hepatocellular carcinomas(HCC) 1 case was hepatoblastoma ,2were suspicious and 1case was inconclusive(Not possible to differentiate between HCC and metastasis**)** (**Figure -1 and Table -2**). Primary lesions includes Hepatocellular carcinoma 16 cases and Hepatoblastoma 1 case (**Table -3).**Among Benign Cases 8 cases were Cirrhosis ,2 cases were Abscess ,1 case was hyadatid cyst ,2 cases were hemangioma and 5 were negative for malignancy (**Table 4**). In adult patients observed between 26-90 years. Peak age of incidence was noted between 60-70 years. Mean Adult age being 56.62±1.5 (**Figure -2)** Only one case was child of 3 years age this was diagnosed as Hepatoblastoma**.** There was slight male preponderance in our study. Male to female ratio was 1.3:1 (**Figure-3).**

Table 1: Total Number of Malignant and Benign Cases

Total	Malignant	Benign
104	85	16
100%	81.7%	15.3%

Figure 1: Histogram shows distribution of cases

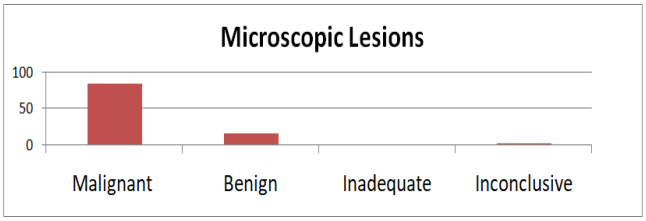


Table 2: Cytomorphologic distribution among Malignant (Primary and Metastatic) Lesions

Cytomorphology of malignant Metastatic lesions	Numbers	Percentage (%)
GIST	1	0.96
NHL	1	0.96
Malignant Melanoma	1	0.96
Urothelial carcinoma	1	0.96
Squamous cell carcinoma	6	5.7
Adenocarcinoma	54	50.96
Poorly differentiated carcinoma	4	3.8
Cytomorphology of malignant Primary lesions		
Hepatoblastoma	1	0.96
Hepatocellular carcinoma	16	15.38
Total Cases	**85**	**81.7 %**

Table 3: Cytomorphologic Distribution among Primary Malignant Lesion

Primary Malignant	Number	%
Hepatoblastoma	1	0.96
HCC	16	15.38
Total	**17**	**16.34**

Table 4: Cytomorphologic Distribution among Benign lesions lesion

Benign Non neoplastic lesions	Total	%
Cirrhosis	6	7.6
Abscess	2	1.9
Hydatid Cyst	1	0.96
Negative For Malignancy	5	4.8
Hemangioma	2	1.9
Total	**16**	**15.38**

Figure -2 Histogram showing Age wise distribution of Lesions

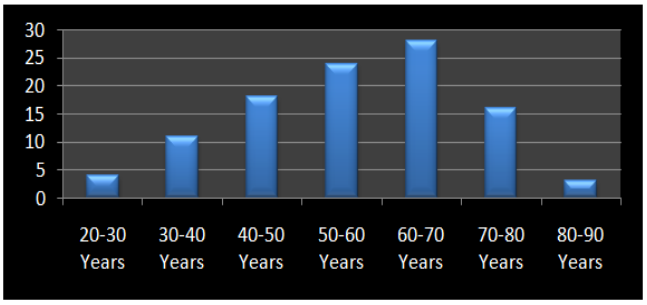


Figure -3 Histogram Showing cases of Hepatic lesions among Male and Female

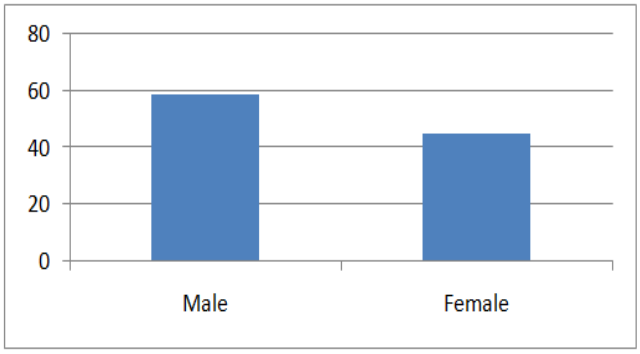


Figure 4: Hepatocellular carcinoma in Liver FNAC, Papanicolaou stain, 20X.

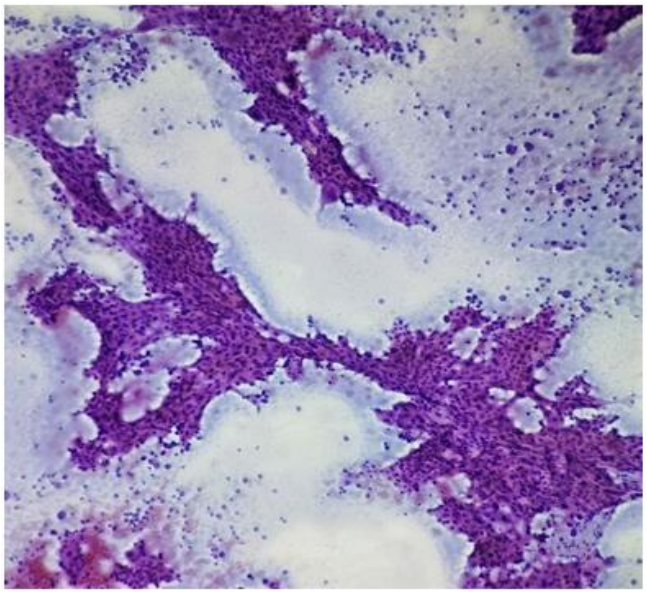


Figure 5: Intranuclear inclusion in Hepatocellular carcinoma in Papanicolaou stain,40x (A).Hepatocellular carcinoma with cells having Prominent nucleoli , 40x (B)

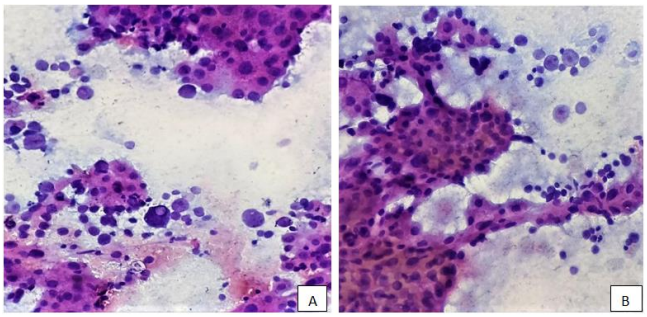


Figure 6: Reactive hyperplasia of Hepatocytes in the Liver Cirrhosis FNA from Hepatic SOL,H&E, 40 X

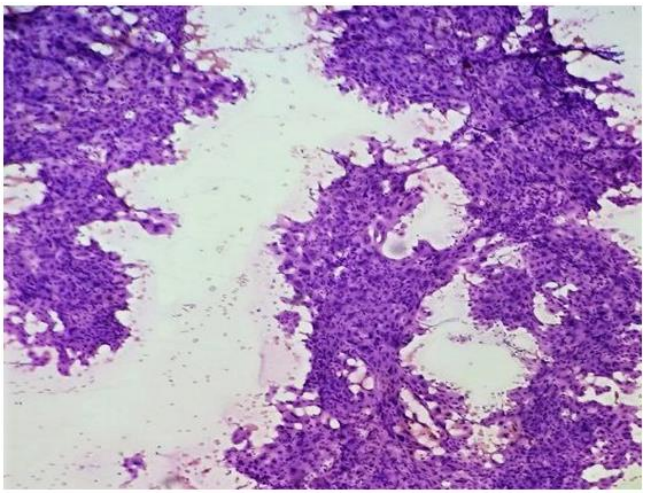


Figure 7: Metastatic deposits of Adenocarcinoma with Benign hepatocytes in right upper and lower corner, Papanicolaou stain, 40x.

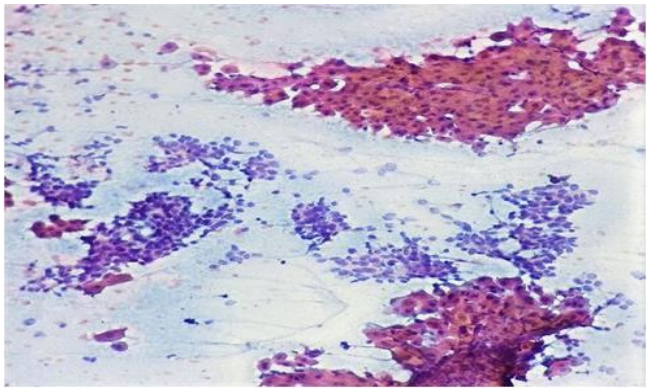


Figure 8: Metastatic deposits of Squamous cell carcinoma, Giemsa stain, 40x (A)Metastatic deposits of Poorly differentiated carcinoma, H& E Stain, 40x (B)

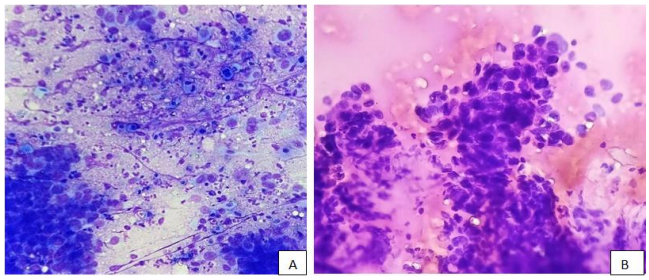


Figure 9: Malignant Melanoma Deposits in the Liver FNAC ,H&E stain, A (20x) and B(40x).

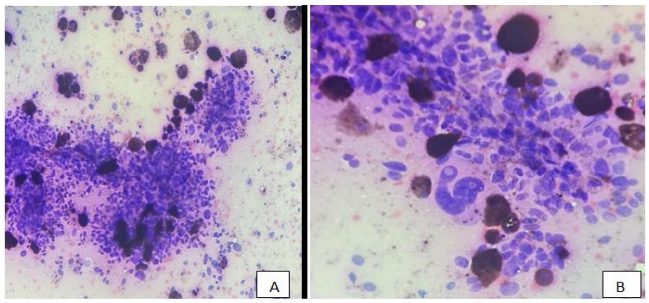
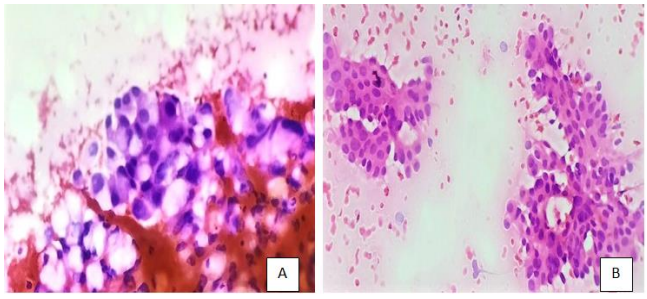


Figure 10: Metastatic deposits from Renal Clear cell carcinoma (A) and From Gastric Adeocarcinoma (B), Hepatic SOL, H&E 40 X



DISCUSSION

Current study was performed to know the cytological spectrum of liver lesions in ultrasound guided FNA. FNAC is a very handy and minimally invasive technique for diagnosis of hepatic SOL in radiological guidance . Malignant liver lesions are very common[4-10] .Liver FNAC is contraindicated in bleeding disorders these cases were screened for abnormal PT/INR before doing the procedure . Hepatic SOLs are commonly presents with weight loss, anorexia , pain abdomen some time these lesions are incidental finding .

In our study Male preponderance (59 cases)was noted with M:F ratio of 1.3:1 and it was concorded with Agarwal A et al and Khanna M et al[11-12]**.**

In our study there were 85 malignant lesions (81.7%) which are in concordance with various studies performed in literature[13-18] .

Out of Metastatic lesions are mainly **adenocarcinoma 53** cases (50.9 %) which was concorded with Ominde ST et al[19] **.**

Metastatic to liver is most common and it occurs through lymphatic, venous or arterial routes. In our study 68 were metastatic cases out of 85 malignant lesions and out of total 104 cases which are in concordance with Johansen P et al[20].

In Malignant lesions Primary and secondary lesions need to differentiate significantly due to their different clinical management. FNAC is very reliable technique to differentiating between primary HCC and metastasis based on cytomorphology. Cytomorphological feature which favours HCC are **[Figure 4-5] :**

1. Total absence of bile duct epithelium is always favor neoplasm.
2. Smears with rich cellularity with sheets, trabecular and acinar arrangement of cells with transgressing capillaries.
3. Giant cells around sheets .Polygonal Cells with High N:C ratio ,macronucleoli ,intranuclear cytoplasmic inclusiosns and many naked nuclei .
4. Absence of bile duct epithelium frequent mitosis favors HCC.

But still in some poorly differentiated lesions it is difficult to differentiate between HCC and metastatic deposits .In our study 2 such cases were inconclusive in FNA, these cases were further confirmed on Histopathology as Poorly differentiated adenocarcinoma.

In Some cases regenerative nodule in cirrhosis may be confuse with well differentiated HCC **[Figure -6], but** lymphocytic infiltrate and presence of bile duct epithelium can differentiate both lesions.

Cytomorphological features of metastastatic adenocarcinoma shows loose clusters of malignant cells with high Nuclear cytoplasmic ratio, hyperchromatic nucleus and scant cytoplasm ,adjacent clusters of benign hepatocyes were also noticed **[Figure 7]** .

There were 6 cases of squamous carcinoma showing malignant cells arranged discretely and in clusters with cytoplasmic keratinisation**. [Figure -8A]**

There were 4 cases of poorly differentiated malignancy with which could not be differentiate cytomorphologically whether adenocarcinoma or squamous cell carcinoma ,these cases were proved poorly differentiated adenocarcinoma histopathologically **[Figure -8 B]** .

One case was metastatic Malignant Melanoma with large cells having prominent nucleoli and intra and extracytoplasmic melanin pigment **[Figure -9 A&B]**

One case was metastatic Renal cell carcinoma clusters of clear cells, 7Cases were metastatic Gastric Adenocarcinoma **[Figure -10A &B]**

The commonest known primary site for metastasis in our study was lung carcinoma followed by Breast carcinoma ,GIT, Renal cell carcinoma ,Ovarian carcinoma and gall bladder carcinoma , Carcinoma cervix and skin malignancy .

There were 16 cases diagnosed as benign .out of 16, 6 were cirrhosis 1 was abcess,1 case was Hyadatid cyst ,5 cases were show negative for malignant features and show only reactive hepatocytes and these features were not suggestive of any parenchymal lesion .2 cases were diagnosed as Hemangioma which were correlated radiologically .These Smears were very scanty and hemorrhagic with few capillaries lined by endothelial cells.

CONCLUSION

Guided FNAC is a precise and cost effective diagnostic tool which helps in differentiating between Benign and malignant lesions and Primary and metastatic carcinoma. It aids in triage the patients and decide further line of management. The study concludes that metastatic cases are more prevalent than primary in liver.

ABBREVIATIONS

FNAC -	Fine Needle Aspiration Cytology
FNA -	Fine Needle Aspiration
SOL -	Space Occupying Lesions
HCC -	Hepatocellular Carcinoma
PT -	Prothrombin Time
INR -	International Normalized Ratio
AFP-	Alfa Feto Protein
HBsAG -	Hepatitis B surface antigen
USG -	Ultrasound Guided
H&E -	Hematoxyline and Eosin

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