



Cytomorphological Patterns of Focal Nodular Lesions of Liver at a Tertiary Care Hospital

Authors

**Dr Prachi Gupta¹, Dr Aakansha Shukla², Dr Ashok Singh³,
Dr Alpana Jain⁴, Dr Sangita Sehgal⁵**

¹Post..Senior Demonstrator, ²Senior Resident, ³Resident, ⁴Assistant Professor, ⁵Professor
Dept of Pathology, SMS Medical College Jaipur, Rajasthan

Corresponding Author

Dr Ruchi Agarwal

Assistant Professor, Dept of Pathology, SMS Medical College Jaipur, Rajasthan, India

Abstract

USG guided Fine needle aspiration cytology (FNAC) is an important and valuable technique for diagnosing benign and malignant space occupying lesions of liver. In present study all cases coming to Sawai Man Singh Hospital Jaipur from July 2018 to December 2018 with focal nodular lesions in liver and adequate cellularity were included. Age range was 32 to 75 years. Primarily the diagnosis was made on May-Graunwald-Giemsa, Hematoxylin and Eosin (H and E). Maximum number of patients (43%) presented with clinical feature of pain in right hypochondrium. Cytomorphologically out of total 100 cases 23% were benign and 77% were neoplastic. Out of total benign lesions 34.7% were of cirrhosis and least 4.34% were of granulomatous lesions and dysplastic nodule each. Out of total 77 neoplastic lesions maximum 40.2% were metastatic, 28.55% of primary hepatocellular carcinoma and least 1.2% were of Hepatoblastoma embryonal type and small cell neuroendocrine carcinoma. Out of total 31 metastatic lesions maximum 12 were from lung carcinomas and only 1 case of plasma cell myeloma. FNAC is a safe and cost effective method that can differentiate benign and malignant lesions accurately.

Keywords: Liver SOL, Hepatocellular carcinoma, Cirrhosis, Malignant epithelial neoplasm.

Introduction

The liver is a large solid organ performing several functions of metabolism, storage and bile synthesis.

Diseases of the liver can be broadly categorised into diffuse disorders or focal space occupying lesions which is the target of fine needle aspiration cytology (FNAC) performed under USG or CT guidance.

Fine needle aspiration cytology (FNAC) is a minimally invasive, cheap and quick technique for the diagnosis of liver space occupying lesions

without any significant complications and minimizing the requirement of biopsy⁽¹⁾. It has a very high diagnostic accuracy, greater than 85%⁽²⁾.

Like many other institutions, liver is the most commonly aspirated abdominal organ in our institution as well.

The present study is conducted to enumerate the cytomorphological spectrum of liver space occupying lesions (SOLs) in a tertiary care hospital.

Material and Methods

All patients coming to Sawai Man Singh Hospital, Jaipur from July 2018 to December 2018 with focal nodular lesion in liver and adequate cellularity were included in the study. An informed consent was taken from all the patients. Complete clinical details, radiological and serology findings were taken from the patient. Patients with bleeding disorders were excluded from our study. FNAC was performed under ultrasound guidance with the assistance of a radiologist.

Under aseptic precautions and with the patient in a comfortable supine position, we used disposable spinal needles (22/23 gauge), 5-10 rapid passes were given. Suction was then applied by 10/20 ml plastic syringe attached to the needle. The slides once prepared were immediately fixed in absolute alcohol. Some of the smears were air dried. May-Graunwald-Giemsa, Hematoxylin and Eosin (H and E) stains were used for routine cytological evaluation.

Observations and Results

During the study period 100 patients were subjected to fine needle aspiration cytology of liver. Out of these cases 47 were males and 63 were females. Age of the patients range from 32 to 75 years. Ultrasonography of liver revealed solitary mass in 40%, multifocal lesion in 20% and diffuse parenchymal disease in 40% cases. Cytologically liver lesions were categorised into benign lesions (23%) and neoplastic lesions (77%).

Table 1: Frequency distribution of cases according to clinical features

Symptoms	No of cases
Pain right hypochondrium	43
Jaundice	21
Ascites	6
Decrease in appetite	12
Pruritis	8
Vomiting	10
Total	100

In the above table, 43% of patients presented with symptom of pain in right hypochondrium, 21% with jaundice, 12% with decrease in appetite, 10%

with vomiting , 8% with pruritis and least 6% with ascites.

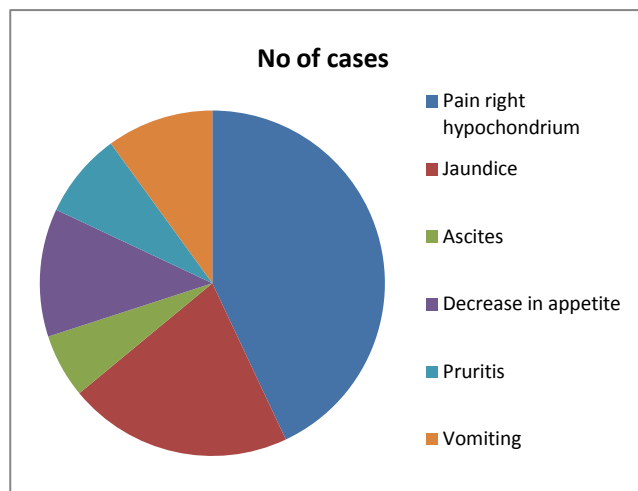


Fig 1 (pie chart): representation of clinical features.

Table 2: Distribution of benign cases

Benign lesions	No of cases	Percentage
Granulomatous	1	4.34%
Haemangioma	2	8.6%
Amoebic abscess	2	8.6%
Cirrhosis	8	34.7%
Inflammation	5	21.7%
Cystic lesion	4	17.39%
Dysplastic nodule	1	4.34%
Total	23	100%

Out of 23 benign lesions out of total 100 cases, maximum 34.7% were of cirrhosis, 21.7% of inflammation, 17.39% cystic lesions, 8.6% each of haemangioma and amoebic abscess and minimum 4.34% each of granulomatous lesions and dysplastic nodules.

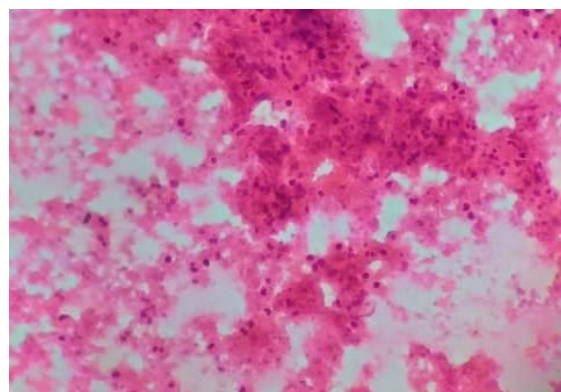


Fig 2: (40X, H&E) Photomicrograph showing neutrophils and RBCs-Inflammatory pathology of liver.

Table 3: Distribution of neoplastic lesions

Neoplastic Cases	No of Cases	Percentage
Primary (HCC)	22	28.5%
Metastatic tumors	31	40.2%
Malignant Epithelial Neoplasm	10	12.9%
Small cell Neuroendocrine carcinoma	1	1.2%
Adenocarcinoma	8	10.3%
Round cell carcinoma	4	5.1%
Hepatoblastoma embryonal type	1	1.2%
Total	77	100%

Out of 77 neoplastic lesions, maximum 40.2% were metastatic lesions, 28.5% were primary hepatocellular carcinomas, 12.9% were malignant epithelial neoplasms, 10.3% were adenocarcinomas, 5.1% were round cell carcinomas, 1.2% each of small cell neuroendocrine carcinomas and hepatoblastoma embryonal type.

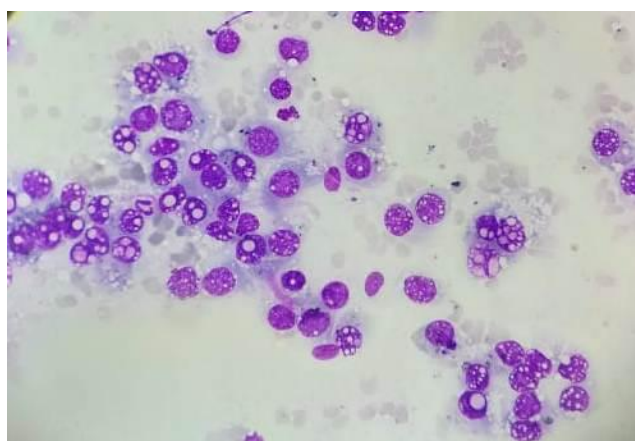


Figure 3: (40X, H&E) Photomicrograph of Hepatocellular carcinoma

Table no 4: Distribution of metastatic lesions

Metastatic lesions	No of Cases
Gastric carcinoma	2
Lung carcinoma	12
Ovary carcinoma	4
Malignant melanoma	4
Plasma cell myeloma	1
Metastatic squamous cell carcinoma	8
Total	31

Out of total 31 metastatic cases, maximum 12 were of lung carcinoma, 8 were of metastatic squamous cell carcinoma, 4 cases each of ovarian metastasis and malignant melanoma, 2 cases were

of gastric metastasis and least number 1 case of plasma cell myeloma.

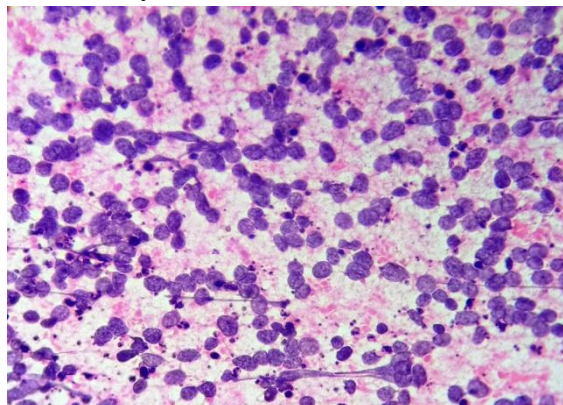


Figure 4: (40X,H&E) Photomicrograph of Metastatic Small Round cell carcinoma

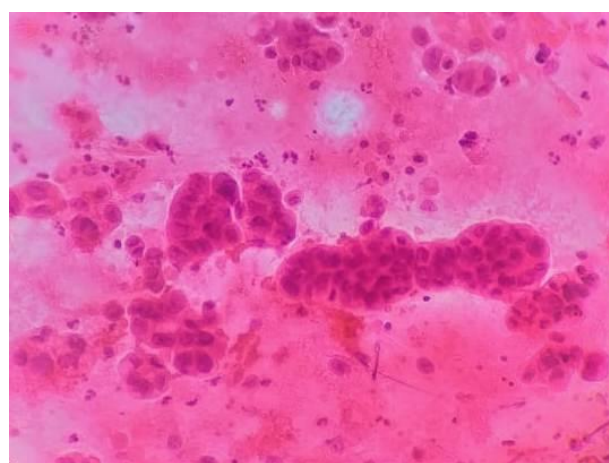


Figure 5: (40X,H&E) Photomicrograph of Metastatic Mucinous Adenocarcinoma from the Gall bladder

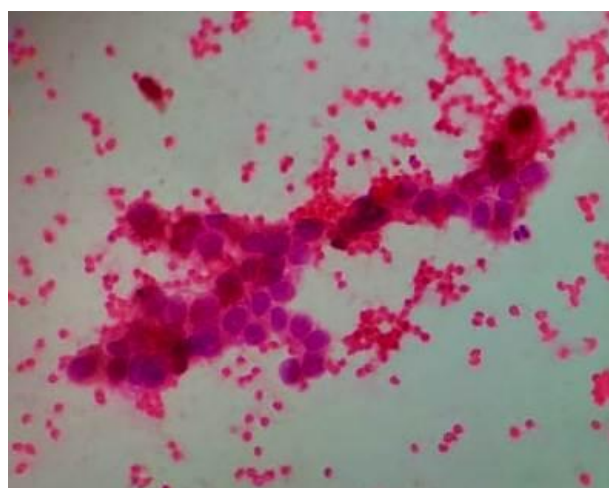


Figure 6: (40X, H&E) Photomicrograph of Metastatic Malignant Melanoma in liver

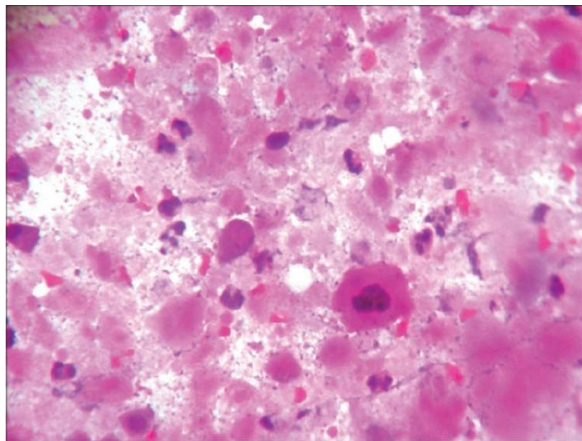


Figure 7: (40X, H&E) Photomicrograph of metastatic squamous cell carcinoma in lymph nodes

Discussion

In our study, out of total 100 cases 23 were benign cases. Out of total benign cases maximum 34.7% were of cirrhosis followed by 17.39% of cystic lesions. The least number of benign cases were of granulomatous lesions and dysplastic nodules i.e. 4.34% each. Similarly Rasania et al. identified 23.3% of the cases as benign and 67.7% as malignant. The same study also diagnosed cirrhosis, abscess, parenchymal liver diseases and regenerative nodule from cytomorphological findings⁽³⁾. Cohen et al. also reported 63.4% cases as malignant and 36.6% as benign.⁽⁴⁾

In our study out of 77 neoplastic cases, maximum 40.2% cases were of metastatic tumours, followed by 28.5% of primary hepatocellular carcinoma and 12.9% were of poorly differentiated carcinoma. Least number of cases were of small cell neuroendocrine carcinoma and hepatoblastoma-embryonal type i.e. 1.2% each.

Similarly Montali et al⁽⁵⁾ and Khanna et al⁽⁶⁾ reported a higher incidence of metastatic neoplasms. Comparable results were also obtained by Nosher et al⁽⁷⁾.

In our study, maximum 43 patients presented with pain right hypochondrium followed by jaundice and decrease in appetite, only 6 patients out of 100 presented with ascites.

Among 31 cases who presented with metastasis, maximum patients (12 cases) presented with metastasis of lung carcinoma, followed by 8 cases

of metastatic squamous cell carcinoma. In present study there were 4 cases each of metastasis of ovarian carcinoma and malignant melanoma. 2 cases were of gastric metastasis and least 1 case of plasma cell myeloma.

Study performed by Orell et al have shown metastatic liver malignancy as high as 90%.⁽⁸⁾

In a study conducted by Siddiqui et al⁽⁹⁾ Around 220/341 cases (64.51%) were neoplastic lesions and the majority of the cases were malignant, i.e., 217/220 cases (98%). Among the metastatic lesions, adenocarcinoma (not otherwise specified) was the most common tumor constituting 143/220 (65%) of all metastatic tumors. The most common primary malignant lesion was HCC 60/220 cases (27.27%). Three cases of each metastatic intraductal carcinoma breast, hepatoblastoma, and adenoma were reported. Two cases of each metastatic renal cell carcinoma and metastatic squamous cell carcinoma were reported.

Conclusion

In the present study, it is concluded that USG-guided FNAC is a very useful procedure in the diagnosis of hepatic lesions as the procedure is simple and safe. The early diagnosis can be done by FNAC along with USG finding without any serious complications related to the procedure.

References

1. Boer BD. Liver and Spleen. In: Orell SR and Sterrett GF, editors. Fine Needle Aspiration Cytology. 5th ed. New Delhi: Elsevier;2012.271-96.
2. Pitman MB. Liver. In: Gray W, Kocjan G, editors. Diagnostic Cytopathology 3rd ed. Philadelphia: Elsevir;2010. 287-317.
3. Rasania A, Pandey C, Joshi N. Evaluation of FNAC in diagnosis of hepatic lesion. J Cytol 2007;24(1):51-4.
4. Cohen MB, Haber MM, Holly EA, Ahn DK, Bottles K, Stoloff AC. Cytologic criteria to distinguish hepatocellular carcinoma from nonneoplastic liver. Am J ClinPathol 1991;95(2):125-30.

5. Montal iG, SolbiatiL, Croce F, Icrace T, Ravetto C. Fine needle aspiration of the liver focal lesions ultrasonically guided with a real time probe.Report on 126 cases.Br j Radiol 1982;55:717-23.
6. Khanna AK, Misra MK, KhannaA,Misra VK, KhannaS.Fine needle aspiration cytology of abdominal masses.JSurgOncol 1990;44:15-9.
7. Noshier JL, PlatkerJ.Fine needle aspiration of liver with ultrasound guidance. Radiology 1980;136:1777-88.
8. Orell SR, Sterrett GF, Walters MN, et al. Retroperitoneum, liver and spleen. In: Manual and atlas of fine needle aspiration cytology. 2nd edn. Hong Kong: Churchill Livingstone 1992:217-266.
9. Siddiqui RP, Bhaskar V, Kujur P, Joshi CK, Wasnik M, Dhruw D. Cytomorphological Patterns of Nodular Lesions of Liver: A 5-year Cross-sectional Study Conducted in Tertiary Care Center of Central India. Int J Sci Stud 2016;4(6):125-129.