Morphological Spectrum of Hepatic in a Tertiary Care Hospital

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Abstract— Hepatic masses include a wide spectrum of lesions that include inflammatory, infectious and neoplastic, both benign and malignant. Fine needle aspiration cytology and core needle biopsy play a major role in diagnosis of different hepatic masses. These procedures are less invasive and provide rapid pathological diagnosis and avoid major surgical procedure like laparotomy. Tissue diagnosis is considered essential in the management of these cases even though clinical, radiological and serological investigations help in narrowing the diagnosis. This study is undertaken to evaluate the usefulness of guided fine needle aspiration cytology and core needle biopsies in the diagnosis of hepatic masses and the limitations and pitfalls. Aims & objectives: To evaluate the usefulness of fine-needle aspiration cytology (FNAC) and needle core biopsy (FNB) in the diagnosis of hepatic masses. Materials and Methods: This is a retrospective study done in histopathology laboratory of tertiary care hospital which includes all the hepatic masses diagnosed on FNAC and core needle biopsy specimens over a period of 18 months. Results: In a period of 18 months there were 30 core biopsies and 25 fine needle aspiration cytology samples from liver masses.

Index Terms— Core biopsies, FNAC, Hepatic lesions

1 Introduction

Liver diseases are amongst common causes of morbidity & mortality in India, which are encountered frequently in day to day practice .To establish the correct diagnosis & treatment, a precise investigation needed to study the nature of lesions in a short duration with less expenses. Histological and cytological assessment of liver is a cornerstone in the evaluation and management of patients with liver diseases and has been an integral component of the clinician's diagnostic and management in an accurate way. Liver biopsy has been regarded as an important diagnostic adjunct in the evaluation of abnormal liver test of unclear aetiology after physical, radiological examination. Though cytological examination gives an idea of the underlying pathology. But the diagnostic dilemma and narrowing of the diagnosis can be possible only in histological examination that changes plan of treatment. Indications of image guided FNA/Core biopsies are follows: For diagnosis, for assessment of prognosis and to assist in making therapeutic management decisions.

2 Aim of the Study

The main aim of the study is to evaluate the usefulness of guided FNAC and core biopsies in diagnosis of hepatic masses and their indications and pitfalls. To study the spectrum of hepatic lesions in a tertiary care hospital.

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3 Materials and Methods

Place of study: GSL Medical College and Hospital, Rajamahendravaram, Andhra Pradesh, INDIA
Duration of study: 18 months
Type of study: Prospective Study
Inclusion criteria: All image guided core biopsies and final needle aspirations received and reported in the histopathology department of tertiary care hospital during the study period were included.
Exclusion criteria: NIL

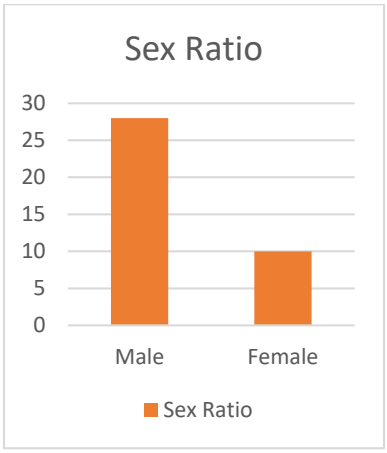
4 Methodology

Percutaneous core biopsies were performed under CT/USG guidance by using semiautomatic biopsy gun of needle bore 18G aspirates were obtained with a 21- or 22-gauge hypodermic/LP needle attached to a 10 ml syringe. Air dried smears were stained by leishman stain while the wet fixed smears were stained by papanicolau's stain. Before procedure written consent was taken from all the patients. Platelet count, PT and APTT were done before the patient was subjected to this procedure.

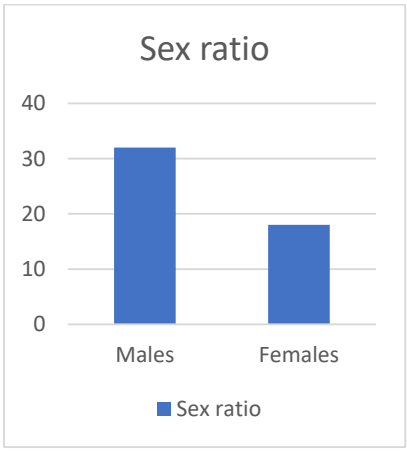
5 Results

In the present study total of 85 cases were evaluated includes 37 cases were core liver biopsy specimens and 48 cases of fine needle aspirations. Among all the cases male preponderance was seen in our study. Highest number of cases were seen in the 6th decade followed by 5th and 4th decade.

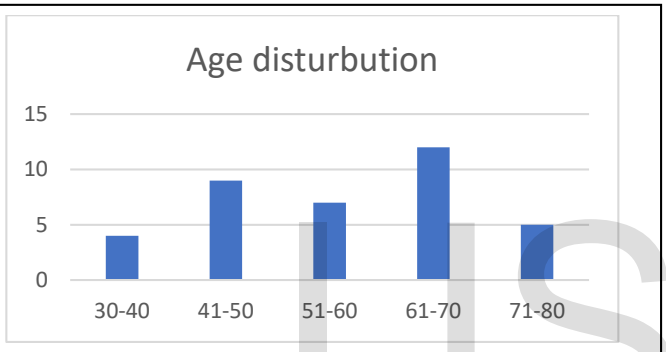
In total of 37 core liver biopsies male preponderance was noted among which highest number of cases were reported in the age group of 6th decade and least number of cases were in 3rd decade of life.



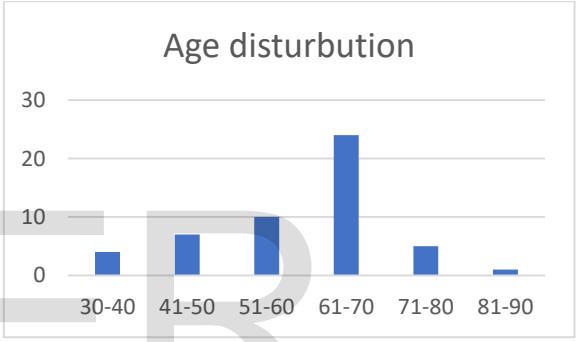
Graph 1. Sex ratio (Core biopsies)



Graph 3. Sex ratio (FNA Cases)



Graph 2. Age distribution



Graph 4. Age distribution

Hepatocellular carcinoma was the maximum number of cases that was reported on the needle core biopsies taken from hepatic lesion which were followed by the secondary deposits of adenocarcinoma in liver.

TABLE 1
SPECTRUM OF HEPATIC LESIONS IN CORE BIOPSIES

Spectrum of hepatic lesions	No. of cases
Hepatocellular carcinoma	18 (50%)
Adenocarcinoma-liver	11 (30%)
Hepatitis	04 (11%)
Tuberculosis	02 (3%)
Regenerating nodule	01 (3%)
Necrosis	01 (3%)

Total number of cases that were diagnosed on the fine needle aspiration cytology were 48 in present study among which highest number of cases were reported in the 6th decade of life.

TABLE 2
SPECTRUM OF HEPATIC LESIONS IN FNAC

Spectrum of hepatic lesions	*No. of cases*
Hepatocellular carcinoma	20 (42%)
Secondary deposits	19 (40%)
Liver abscess	04 (8%)
Normal liver cytology	03 (6%)
Infectious aetiology	02 (4%)

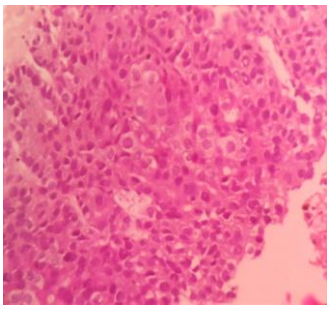


Fig. 1. Photomicrograph 40 X (H&E) Hepatocellular carcinoma

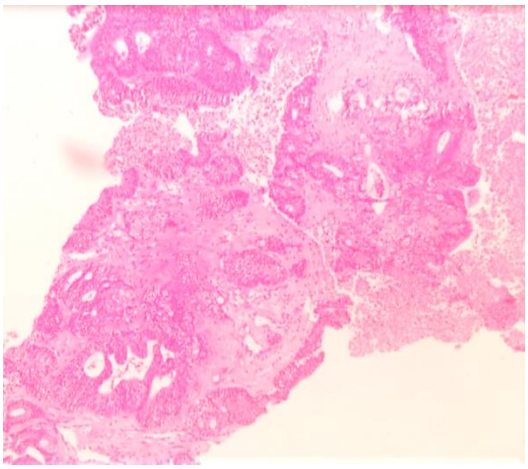


Fig. 2. Photomicrograph 100 X (H&E) Adenocarcinoma deposits

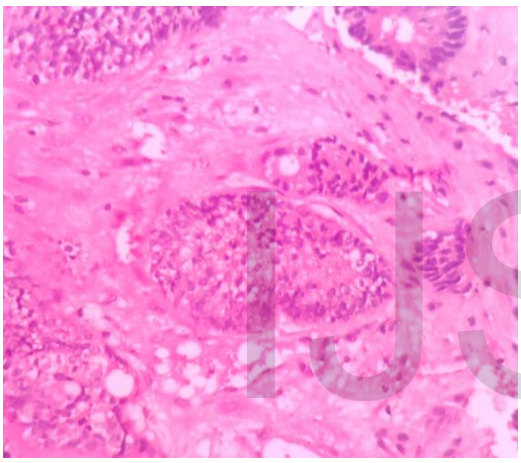


Fig. 3. Photomicrograph 400 X (H&E) Adenocarcinoma deposits

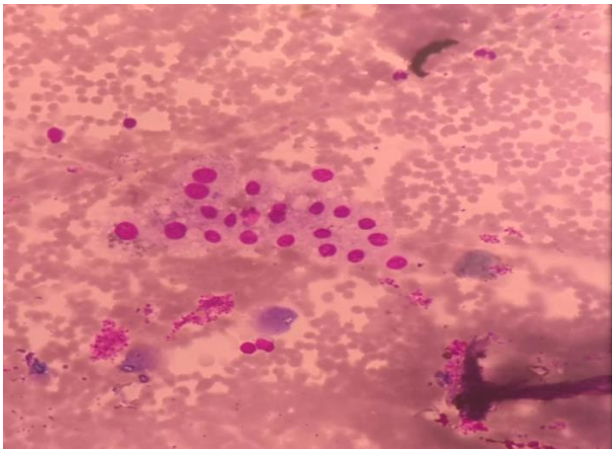


Fig. 4. Photomicrograph 100 X (leshmian) Normal liver cells

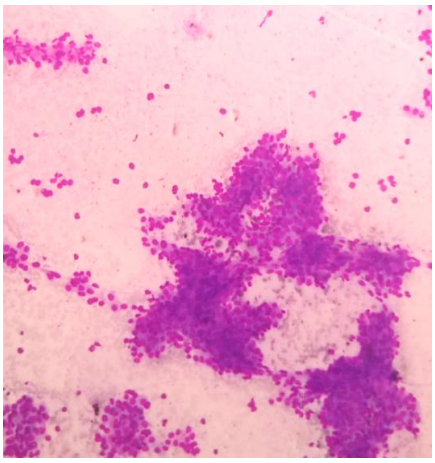


Fig. 5. Photomicrograph 100 X (leshmian) Hepatocellular carcinoma

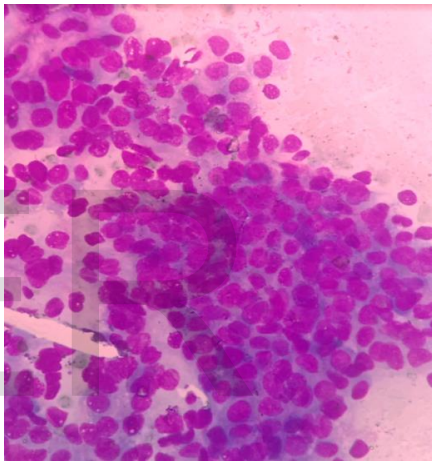


Fig. 6. Photomicrograph 400 X (leshmian) Hepatocellular carcinoma

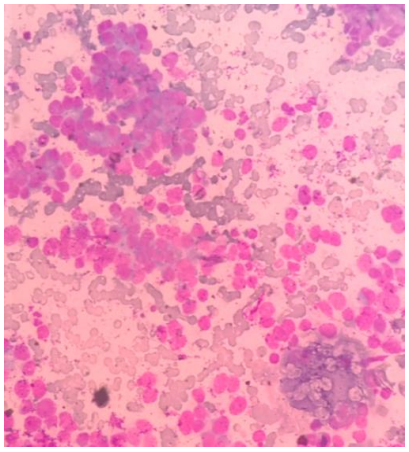


Fig. 7. Photomicrograph 100 X (leshmian) Adenocarcinomatous deposits

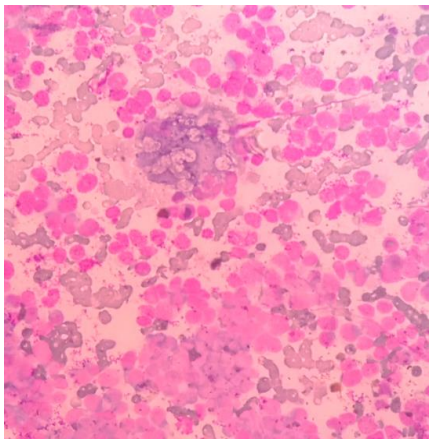


Fig. 8. Photomicrograph 400 X (leshmian) Adenocarcinomatous deposits

6 Discussion

Image guided core biopsies and fine needle aspiration procedures are widely accepted investigation for diagnosis of liver lesions because of its rapidity and prompt diagnosis in less time with low cost which helps in diagnosis of various hepatic lesions.

The various liver lesions encountered in the study were neoplastic and non –neoplastic lesions among which predominant cases were of neoplastic in both core biopsies and in FNAC. HCC was differentiated from other non-malignant conditions of liver by the different features collectively like cellularity, acinar pattern trabecular pattern, hyperchromasia, uniformly prominent nucleoli, multiple nucleoli and atypical naked nuclei as described by Cohen et al. The most important and helpful cytological features were the trabecular pattern, irregularly granular chromatin, multiple nucleoli, atypical naked nuclei. The atypical naked nuclei were included as one of the important criteria for the diagnosis of HCC by Pedio et al as these were rarely seen in benign and metastatic conditions.

Quality of smear also plays a key role in cytological diagnosis and proper processing and cutting of blocks in HPE. There are three key factors quick fixing, equal smear and enough cells, proper fixing avoids the cellular degeneration caused by dryness in FNA. While right gauze needle and identifying proper site for biopsies plays a major role in diagnosis of hepatic lesion.

In core biopsies or FNA heapatocellular carcinoma were the highest cases encountered in the present study. Secondary deposits from adenocarcinoma carcinoma were diagnosed in the aspiration cytology. One case of squamous carcinoma deposists also included in the study.

Core biopsies with automatic gun of needle 18G under image guided (CT/USG) played a major role in diagnosis of HCC & secondary deposits in early hepatic lesion in correlation with other clinical and radiological features. Secondary deposits that were reported, primary lesion was found in GIT (3 cases), pancreas (01 case), gallbladder (01 case) and breast (01 case). In rest all of the cases primary was unknown- ?

TABLE 3
Adequacy of Samples Compared to Other Studies

Study	*Total no. of cases*	*Adequate*	*Inadequate*
Jitendra et al	150	147 (98.00%)	03 (2.00%)
Asghar et al	32	30 (93.75%)	02 (6.25%)
Present study	48	45 (93.75%)	03 (6.25%)

TABLE 4
Distribution of Cases

Study	*Total no. of cases*	*Malignant*	*Benign*	*Non-neoplastic*
Jitendra et al	150	142 (94.60%)	05 (3.00%)	03 (2.00%)
Asghar et al	32	18 (56.25%)	06 (18.75%)	08 (25.00%)
Present study	48	39 (81.25%)	NIL	06 (12.50%)

7 Conclusion

- Both images guided fine needle aspiration and core biopsy play equal role in diagnosis of both HCC and secondary deposits along with various benign lesions of liver.
- The diagnostic accuracy was nearly 94% in both core biopsies and FNACs.
- Cytological smears give lots of information for diagnosis of liver lesions in an early stage without no time that is cost effective.
- On the other hand, core biopsies that help in conclusion of both primary and secondary deposits in liver with less invasive technique which leads the path for plan of treatment in no less time.
- Post procedure complications were rare in both modalities of diagnosis
- And hence both procedures were found to be safe methods when due precautions were taken.

References

[1] Das, D. K., Tripathi, R. P., Kumar, N., Chachra, K. L., Sodhani, P., Parkash, S., & Bhambhani, S. (1997). Role of guided fine needle aspiration cytology in diagnosis and classification of liver malignancies. *Tropical gastroenterology: official journal of the Digestive Diseases Foundation*, *18*(3), 101–106.

[2] Houn H-Y, Sanders M. M., & Walter EM JR. Fine needle aspiration in the diagnosis of liver neoplasms: A review. *Ann Clin Lab Sci,* 21: 2-11, 1991.

[3] Selhi P. K., Narang V., Kaur H., & Sood N., (2015). Cytomorphological Spectrum of Hepatic Nodular Lesions A Tertiary Care Centre Experience. *National Journal of Integrated Research in Medicine*, *6(1*), 57-61.

[4] Mcgahan, J. P., Bishop, J., Webb, J., Howell, L., Torok, N., Lamba, R., & Corwin, M. T. (2013). Role of FNA and Core Biopsy of Primary and Metastatic Liver Disease. International Journal of Hepatology, 2013, 1-10. doi:10.1155/2013/174103

[5] Nasit, J., Patel, V., Parikh, B., Shah, M., & Davara, K. (2013). Fine-needle aspiration cytology and biopsy in hepatic masses: A minimally invasive diagnostic approach. *Clinical Cancer Investigation Journal, 2*(2), 132. doi:10.4103/2278-0513.113636

[6] Wee, A. (2005). Fine needle aspiration biopsy of the liver: Algorithmic approach and current issues in the diagnosis of hepatocellular carcinoma. *CytoJournal, 2*, 7. doi:10.1186/1742-6413-2-7