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SPECTRUM OF LESIONS IN FINE NEEDLE ASPIRATION CYTOLOGY OF SPACE OCCUPYING LESIONS OF LIVER

Pathology

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ABSTRACT

BACKGROUND: The liver is a common site for primary and secondary tumors. The secondary tumors are not only the deposits from malignant tumors within the abdomen but also from extra-abdominal primary malignant neoplasm. Fine-needle aspiration cytology (FNAC) is a less invasive, rapid, and less expensive investigation for the diagnosis of benign and malignant lesions of liver.

METHODS: This study was carried out retrospectively for six months from Jan 21 to June 21. A total of 48 FNACs were included in the study. Clinical history and relevant investigations were noted from clinical records. The smears are methanol fixed and stained with hematoxylin and eosin stain and observed under light microscope.

RESULTS: We included a total of 48 FNACs out of which 58.33% were male and 41.67% were female patients. Age ranged from 15 years of age to 80 years with mean age of 57.31 years. Maximum number of cases were in seventh decade with 27% of cases. There were 6 cases of nonneoplastic lesions, 7 cases were primary hepatic malignancies and 33 cases were metastatic tumors.

CONCLUSIONS: FNAC is a very useful diagnostic tool in diagnosing various SOL of the liver with high degree of accuracy. Detailed study of morphological details along with correlation with clinical and radiological features will help in the diagnosis. In areas with diagnostic dilemma, the use of cell block and immunohistochemistry will help in the diagnosis. Metastatic tumors remain the most common of liver SOLs.

KEYWORDS

Liver SOL, FNAC, Hepatocellular carcinoma, Metastatic tumors

INTRODUCTION

The liver is a common site for primary and secondary tumors. The secondary tumors are not only the deposits from malignant tumors within the abdomen but also from extra-abdominal primary malignant neoplasm. Liver can also get metastatic deposits from different sarcomas and lymphomas. These lesions usually present as single or multiple space occupying lesions (SOL) in liver.[1]

Fine-needle aspiration cytology (FNAC) is a less invasive, rapid, and less expensive investigation for the diagnosis of benign and malignant lesions of liver. This was first applied to liver masses back in 1893 by Erlich and later on it was first done percutaneously for diagnostic purposes in 1923.[2] It is used for mainly diagnosing primary or metastatic lesions in liver but occasionally may be useful to diagnose inflammatory lesions or diffuse liver diseases which may appear as non-homogenous regions in imaging mimicking as mass-like lesions. Ultrasound guided FNAC has paved the way for diagnostic assessment of SOLs of liver with high accuracy, sensitivity and specificity.[3-7]

However, in certain situations, FNA may not yield sufficient information for an accurate diagnosis. The risk of false negative and indeterminate results are the major drawbacks of FNA. Sometimes there will be need for pattern recognition and need for ancillary studies like special stains and immunohistochemistry in rendering a precise diagnosis.

MATERIALS AND METHODS

This study was carried out in the Department of Pathology, Sardar Patel Medical College, PBM and Associated Group of Hospitals, Bikaner retrospectively for six months from January 2021 to June 2021. All FNACs both percutaneous unguided and ultrasound guided FNACs received by the department during study period were included in the study. Improper and acellular smears were excluded. Clinical history and relevant investigations were noted from clinical records. The smears are methanol fixed and stained with hematoxylin and eosin stain and observed under light microscope.

RESULTS

We received a total of 59 FNACs during the study period, of which 48 were adequate, and 11 were inadequate. There were 28 (58.33%) male patients and 20 (41.67%) were female patients. Age ranged from 15 years of age to 80 years with mean age of 57.31 years [Figure 1]. Maximum number of cases were in seventh decade with 27% of cases.

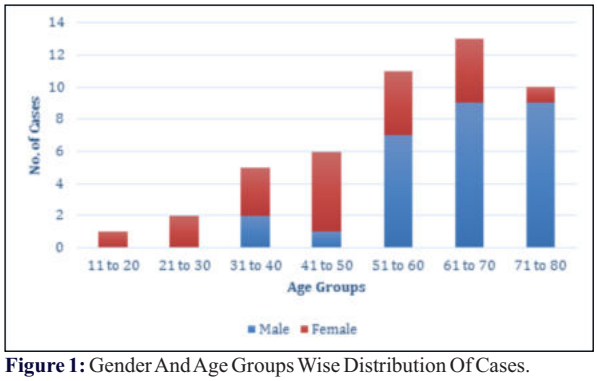

Figure 1: Gender And Age Groups Wise Distribution Of Cases.

Among the 48 adequate aspirations, 6 cases were nonneoplastic lesions, 7 cases were primary hepatic malignancies and 33 cases were metastatic tumors. [Figure 2].

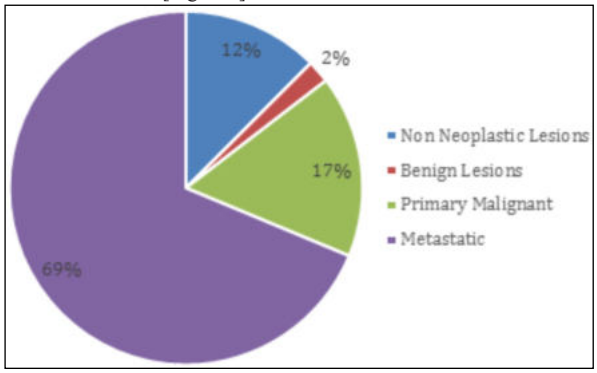

Figure 2. Distribution Of Findings In Liver SOL.

The most common nonneoplastic lesions included chronic parenchymatous disease (3 cases), Among malignant liver tumors maximum cases were metastatic tumors in which most common was metastatic adenocarcinomas (16 cases). [Table 2] In 7 cases cytological features, serum markers and radiology findings were overlapping between primary and secondary tumors, and a definitive diagnosis could not be done and these were marked as undifferentiated tumors.

Table 2. Distribution Of Cases In Liver SOL FNAC.

Type of lesion	Diagnosis	No. of cases	Percentage (%)
Non Neoplastic Lesions		6	12.5
	Chronic parenchymatous disease	3	6.25
	Abscess	2	4.17
	Chronic granulomatous inflammation	1	2.08
Benign Lesions	Hemangioma	1	2.08
Primary Malignant	Hepatocellular Carcinoma	8	16.67
Metastatic		33	68.7
	Adenocarcinoma	16	33.33
	Squamous Cell Carcinomas	8	16.67
	Small Cell Carcinomas	2	4.17
	Undifferentiated Carcinomas	7	14.58

DISCUSSION

Liver space occupying lesions range from infectious and inflammatory processes to primary and secondary malignant lesions. Clinical, serological and radiological findings help to narrow down the differential diagnosis but do not always allow precise diagnosis of the lesions.[8,9] Markedly elevated serum AFP values mostly indicate neoplastic nature of liver SOL, but normal serum AFP values do not exclude the possibility of hepatocellular carcinoma and elevated AFP levels can be seen in inflammatory conditions of liver.

In the present study maximum number of cases were seen after age of 51 years. This is in agreement with studies done by Tailor et al[1], Thiruman et al, and Kaur and Selhi[4] Male patients were affected more than the females, with male to female ratio of 1.4:1. We observed that males are more affected in age groups above 51 years whereas females are more affected in younger age groups. Similarly, the studies of Kaur and Selhi,[4] Ahuja et al[7] also reported male predomination in the subjects of SOL from range of 2:1 to 4:1.

In our study, metastatic tumors outnumbered primary liver tumors. Majority of other studies also observed secondary tumors as the most common malignant liver lesions. In our study, 69% of hepatic lesions were metastatic tumors. This is in concordance with other studies of Rasania et al with 70.4% and Ali SR with 58% of lesions were metastatic tumors.[11,12] Adenocarcinoma was the most common metastatic tumor in our study. In our series, there were 7 cases which were diagnosed as poorly differentiated or undiffrentiated carcinoma. By cytological examination it was not possible to diagnose as primary or metastasis in these cases. Such cases should be further evaluated with cell block preparation and needle biopsies. Similarly, the poorly differentiated carcinoma could have been categorized as primary or metastatic using IHC panel.

CONCLUSION

Fine needle aspiration cytology is a very useful diagnostic tool in diagnosing various SOL of the liver with high degree of accuracy. Detailed study of morphological details along with correlation with clinical and radiological features will help in the diagnosis. In areas with diagnostic dilemma, the use of cell block and immunohistochemistry will help in the diagnosis. Metastatic tumors remain the most common of liver SOLs.

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