

Cytomorphological Evaluation of Liver and Gall Bladder Neoplasms: A 3 (Three) Years Study

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ABSTRACT

Introduction: Neoplasms of liver and gall bladder are associated with considerable difficulty as far as definitive cytopathological diagnosis is concerned because of the obvious difficulties in sampling as well as localization of the mass. Image guidance solves this problem to a great extent. The cytomorphological details of cases with gall bladder and neoplasms sampled under image guidance was studied for a period of 3 years and are described in the present article.

Material and Methods: Cases with hepatic and gall bladder neoplasm sampled under USG guidance for a period of 3 years from September 2013 to August 2016 at Assam Medical College and Hospital, Dibrugarh were studied. Smears were prepared along with cell block preparation in all possible cases.

Results: A total of 51 cases were studied of which gall bladder constituted 58.8% and liver constituted 41.1%. 13.7% of aspirates had insufficient material and 74.5% of cases were diagnosed conclusively. 68.62% were females and most common age group was 50 to 60 years. Gall bladder adenocarcinoma constituted the most common neoplasm with 52.63% of all conclusively diagnosed cases followed by metastatic adenocarcinoma to liver.

Conclusions: Image guided F.N.A.C can be used for providing accurate cytomorphological diagnosis in neoplasms of liver and gall bladder which is a minimally invasive procedure as well and can prove invaluable in prompt management of patients with such lesions.

Keywords: Fine Needle Aspiration Cytology, Liver, Gall Bladder.

INTRODUCTION

Liver and Gall bladder neoplasms pose great problem in diagnosis, as adequate sampling of tissue is difficult yet very important for proper diagnosis and timely treatment which may be life-saving for the patient. Distinguishing hepatocellular carcinoma from metastatic carcinoma is very important for streamlining treatment plan but can prove to be difficult with imaging modalities alone. Introduction of image guided sampling, however, has solved most of these problems.

Now, even smaller masses can be sampled with ease, very minimal complicity and remarkable accuracy. Liver cancer is the sixth most common cancer, the third cause of cancer-related death and accounts for 7% of all cancers¹ worldwide. Incidence of gall bladder cancer has been reported to be very high in north east India particularly Assam.² Under image guidance F.N.A.C can not only help in detecting malignancy but also provide information regarding the tumour grade and differentiation status which has therapeutic implications as well. Image guided FNAC of intra abdominal masses are associated with very low complication rates of haemorrhage or needle track seeding and no such complication was observed during our study period. Cell block preparation further helps in achieving at the accurate diagnosis by providing architectural details as well as scope for

immunohistochemistry.

The main objective of the study was to evaluate the role of Fine Needle Aspiration Cytology in the Diagnosis of Liver and Gall Bladder neoplasms.

MATERIAL AND METHODS

The study was conducted in the Department of Pathology, Assam Medical College and Hospital for a period of 3 years from September 2013 to August 2016 after obtaining ethical clearance from the institutional ethical committee. Detailed and informed consent was obtained from the patients before the procedure.

Inclusion criteria: Suspected hepatic or gall bladder masses on radiological or clinical finding.

Exclusion criteria: Patients with coagulation disorders and uncooperative patients.

Methodology: F.N.A.C with 20-22 Gz lumbar puncture needle under image guidance with 20cc syringe used for aspiration. Smears were air dried and stained with MGG or wet fixed with 95% methyl alcohol and subjected to H and E or papanicolaou staining.

Cell blocks were prepared wherever possible with the residual material after preparation of smears by Thrombin Clot technique and subjected to routine histopathological processing.

STATISTICAL ANALYSIS

Microsoft office 2007 was used for statistical analysis. Descriptive statistics like mean and percentages were used for the analysis.

RESULTS

A total of 51 cases were studied, of which gall bladder cases were 30 (58.8%) and 21 (41.1%) were liver masses. 8 cases (13.7%) had insufficient material. Out of the remaining 44 cases with sufficient material, 38 (74.5%) were diagnosed conclusively. 35(68.62%) out of the total 51 cases were females and most common age group was 50-60 years. Most common neoplasm was adenocarcinoma of gall bladder with 52.63% of the total conclusively diagnosed cases.

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Age of the patient(yr)	Differentiation	Cellular Arrangement	Transgressing endothelial cells	Cytoplasm	Nucleus
48	Well	Sheets and Acini	Present	Moderate amount, granular	Coarse chromatin, prominent nucleoli, stripped nucleus
52	Moderate	Sheets	Absent	Moderate amount, Vacuolated	Coarse chromatin, conspicuous nucleoli
68	Moderate	Trabeculae	Absent	Moderate amount, Granular, Inclusions	Coarse chromatin, conspicuous nucleoli
45	Poor	Dispersed	Absent	Moderate Amount, Vacuolated	Coarse Chromatin, Conspicuous nucleoli, Intranuclear Inclusions, Stripped nuclei

Table-1: Cases of hepatocellular carcinoma

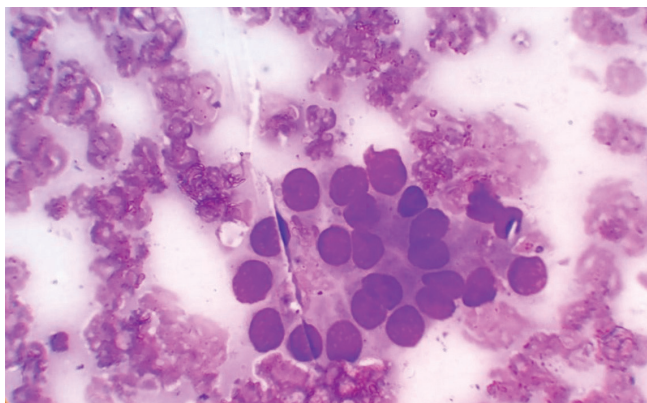


Figure-1: Well differentiated adenocarcinoma of gall bladder showing well formed acini

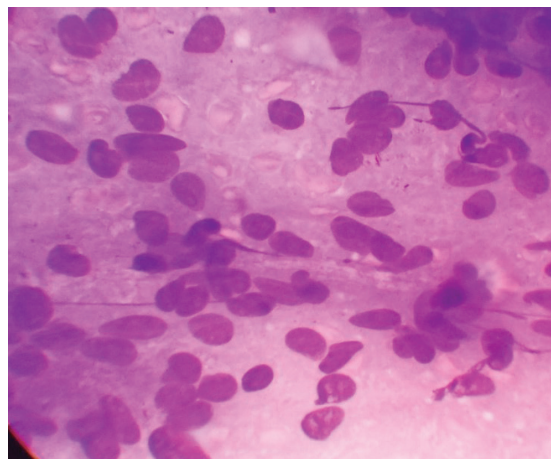


Figure-2: Metastatic GIST to liver showing spindle cells with tapering ends

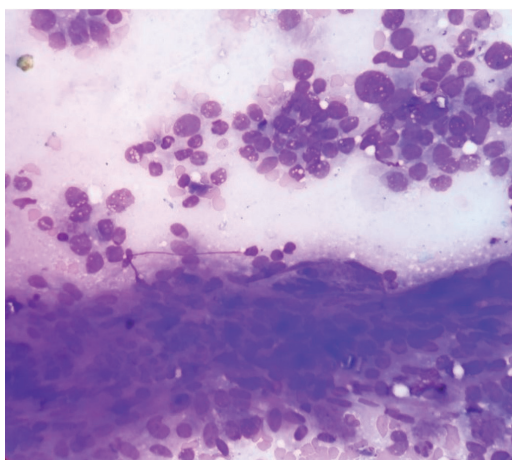


Figure-3: Hepatocellular carcinoma (well differentiated) showing transgressing endothelial cells through carcinomatous cells

Out of a total of 30 gall bladder aspirates, 5 (16.66%) had insufficient material. In another 4 (13.33%) cases diagnosis remained inconclusive because of only necrotic material in one, necrotic and inflammatory cells with scanty malignant appearing epithelial cells in other three cases. 21(70%) cases of gall bladder masses were diagnosed conclusively, of which 1 case (4.7%) was adenosquamous carcinoma and rest 20 (95.23%) were adenocarcinoma. Moderately differentiated adenocarcinoma constituted 14(70%) of total 20 cases of adenocarcinoma followed by 3(15%) cases each of poorly and well differentiated variant (Figure 1). Two cases of adenocarcinoma were reported post cholecystectomy in the gall bladder fossa region, one each were moderate and poorly

differentiated. The case of adenosquamous carcinoma showed ill defined acini of adenocarcinomatous cells with round to oval nucleus prominent nucleolus and moderate amount of pale blue cytoplasm along with few distinctly malignant squamous cells dispersed in the background. In the adenocarcinoma cases, arrangement of cells varied from well formed acini in the well differentiated cases to ill defined clusters and singly dispersed cells. One case showed presence of intranuclear cytoplasmic inclusions while another case showed signet ring appearance of cells without extracellular mucin.

In the hepatic aspirates, 2(9.5%) cases had insufficient material consisting of only blood elements, while in another 2 cases diagnosis remained inconclusive because of only inflammatory cells with normal looking and degenerated hepatocytes. 17(80.95%) of the cases were diagnosed conclusively, of which metastatic adenocarcinoma constituted maximum number of cases-11(64.7%), followed by hepatocellular carcinoma 4(23.5%) and one case each of metastatic GIST to liver and hepatoblastoma. Out of the hepatocellular carcinoma cases (table 1), two were moderately differentiated, one each were well differentiated and poorly differentiated. The well differentiated variants showed the presence of transgressing endothelial cells (Figure 2). The poorly differentiated variant was observed in a 45 years old female who was seropositive for HBsAg. Out of the metastatic adenocarcinoma cases majority was observed to be from colon- 5(45.45%) cases and one case each from lung, gallbladder, and ovary, while in another 3(27.27%) cases origin could not be determined. One case of hepatoblastoma was diagnosed.

The smear was composed of clusters of small round cells with high nucleocytoplasmic ratio, conspicuous nucleoli, coarse chromatin and few fetal epithelial cells. One case of metastatic GIST was detected in a 45years old male. The smear showed spindle cells with mild anisonucleosis and tapered cytoplasm (Figure 3).

Cell block was available in 13 cases, of which 2 cases were hepatocellular carcinoma, 3 cases were metastatic carcinoma of liver and the remaining were adenocarcinoma of gall bladder.

DISCUSSION

Gall bladder lesions

F.N.A.C is useful in detecting as well as grading of Gall bladder carcinoma to a great extent with a sensitivity reported from 74% to 100% and inadequacy rate of 4 to 29%. False negativity however is a common limitation, with a reported rate of 11-41%, due to incorrect sampling, fibrosis or necrosis³ Overall adequacy of smears was found to be 86.2% similar to a study by A Rai et al done on deep seated lesions, despite of all smears being taken under image guidance. Gall bladder adenocarcinoma constituted the most common malignancy with 52.63% in our study. In a similar study by M Barbhuyan⁴ et al most common lesion was metastatic adenocarcinoma to liver (74.9%). Out of the total 30 aspirates from gall bladder, 5(16.66%) were inadequate for diagnosis as compared to 9.9% in a similar study by R. Yadav et al.⁵ 16% of adequate aspirates from gall bladder cases were inconclusive, of which 8% showed only inflammatory material as compared to 16.66% in a study by V.K.Shukla et al.⁶ Moderate differentiation was the most commonly observed grade in gall bladder adenocarcinomas constituting 70%, followed by 15% each of poorly and well differentiated variant. In the study conducted by R Yadav et al, moderate, poor and well differentiated variants constituted 84.5%, 9.2% and 6.3% respectively. Adenosquamous carcinoma constituted 1 (4.7%) of all cases compared to 4.1% in the study by R.Yadav et al.

Hepatic lesions

Sensitivity for diagnosis of hepatic masses by F.N.A.C has been reported to be as high as 75.34% to 93%. Under image guidance, complications and errors at sampling are reduced to a considerable extent. Adequacy of smears in our study was 90.4% as compared to 91% in a study by Sudha P. Meena et al.⁷ Metastatic adenocarcinoma constituted 70.58% and primary carcinoma constituted 29.41% of all conclusively diagnosed cases while in the study carried out by A Yadav et al⁸, it was found to be 76.42% and 22.80% respectively. Hepatocellular carcinoma formed 23.5% of all conclusively diagnosed liver aspirates in our study, compared to 26.2% in a study by Rasanias et al.⁹ Among the metastatic carcinomas, metastasis from GIT was most common (41.6%). Similar results were found in a study by M Barbhuyan et al. Origin could not be determined in another 25% of cases. One case of metastatic GIST to liver was detected (5.89%). Metastatic GIST are the most frequently encountered sarcoma in liver¹⁰ and liver is one of the most common metastatic site for GIST(65%).¹¹

CONCLUSION

In evaluating gall bladder and liver neoplasms, F.N.A.C can provide diagnostic accuracy which carries grading and prognostic significance as well. Cell blocks provide additional

architectural details, besides carrying the invaluable scope for immunohistochemical studies and thus circumvent the need for invasive techniques like biopsy which carries a slightly higher complication risks.

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