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UTILITY OF IMAGE GUIDED FINE NEEDLE ASPIRATION IN DIAGNOSIS OF MASS LESIONS– ONE YEAR EXPERIENCE IN A TERTIARY CARE HOSPITAL

Pathology

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ABSTRACT

Background: Fine needle aspiration cytology (FNAC) as an initial screening modality is an important interventional method of radiology has it possible for many inaccessible lesions within the abdomen, pelvis, thyroid to be safely sampled. The procedure is relatively inexpensive and can also be done on an outpatient basis with minimal morbidity to the patient and correlate respective tumor marker of lesions. **Methods:** This present study was done in Department of Pathology in collaboration with Department of Radiology for a period of one year. A total of 125 aspirations were performed under image-guidance. Air dried and wet fixed smears were stained with May Grunewald Giemsa (MGG). **Results:** A total 125 aspirations were carried out under image guidance0. Majority of the patients were male in the present study. Total number of inadequate sample were 17 cases, inflammatory lesions were 2 cases, benign lesions were 11 cases, and malignant lesions were 95 cases. The most common site of malignant lesion was liver (36 cases) followed by ovary (22 cases). **Conclusion:** Image guided (USG, CT) FNAC of deep seated lesions and inaccessible site with tumor marker correlation can improve the diagnostic yield, leading to early diagnosis.

KEYWORDS

Guided FNAC, Malignant lesion, Liver

INTRODUCTION

Fine needle aspiration cytology (FNAC) is the study of morphology of cells obtained by vacuum aspiration (1). FNAC using image guidance (CT, USG) is useful in the field of cytopathological diagnosis. Since, it has high degree of accuracy and less discomforting to the patient, this technique permits the accurate localization of non-palpable and deep seated lesions. It aids us in obtaining tissue for cytological examination and diagnosing neoplastic and inflammatory conditions. However, image guidance does not always differentiate between malignant and benign lesions (2). The liver is a common site for primary and secondary tumors (3) as well as involved in many non-neoplastic conditions (4). Serological markers like alpha fetoprotein are useful in narrowing the differential diagnosis when their level are markedly elevated (4). It is difficult to diagnose intra-thoracic and intra-abdominal masses at inaccessible sites. (5). Image guided FNAC is an accurate, painless and safe technique in such cases. The secondary tumors are not only the deposits from malignant tumors within the abdomen but also from extra-abdominal primary malignant neoplasm (3). A definitive diagnosis remains important for the treatment, management as well as staging of cancer. The study was conducted with the aim of diagnosing various mass lesions in the body using image guided FNAC and correlation with tumor marker levels wherever possible.

METHODS

The present study was carried out in the department of Pathology, RNT Medical College and MB hospital, Udaipur, Rajasthan. The study was a descriptive cross sectional study for one year from May 2021 to May 2022 and included 125 cases. All the superficial well-defined, pulsatile swellings and swellings with surface ailments (ulceration, pigmentation etc.) were excluded from the study. Only those patients with normal coagulation profiles were selected for the study. Relative contraindication included less severe coagulopathy and uncooperative or combative patient. The patients were subjected to an ultra sonographic or computed tomographic evaluation to assess the origin of the mass and its relationship with the adjacent organs. After mild sedation (wherever needed) and sterile preparation the needle was inserted under USG/CT guidance and a sensation of tactile tumor resistance was often felt. Aspiration was performed using 18-22G aspirating needles. Whenever the material was found insufficient for definite diagnosis, the procedure was repeated. The slides were stained with May-Grünwald-Giemsa. Special stains like Gram stain/Ziehl-Neelson were done wherever required. Serological marker study was done in those cases where needed.

RESULTS:

A total of 125 aspirations were carried out under image guidance. The maximum number of cases was in the age group of 51 to 60 years. The female predominated male with the M: F ratio of 1:1.7. Total number of inadequate samples was 17 cases, inflammatory lesions were 2 cases, benign lesions were 11 cases, and 95 cases were malignant. The most common site aspirated was liver followed by ovary.

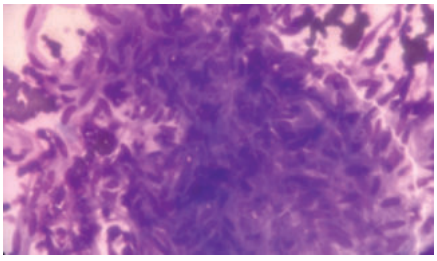
In the present study, out of 95 malignant cases, maximum cases were diagnosed in liver 36 cases, followed by 22 cases in ovary, 9 cases in gallbladder, 8 cases in lymph node, 7 cases pelvic mass, 3 cases in peritoneal mass, 2 cases in lung and 2 cases in renal mass, 1 case in breast, 1 case in iliac mass, near eye, pancreas, lower rib and axilla, respectively. In liver, 05 cases were diagnosed as hepatocellular carcinoma and remaining 26 cases were diagnosed as metastatic lesions.

Table 1: Distribution of cases according to Cytomorphological Diagnosis

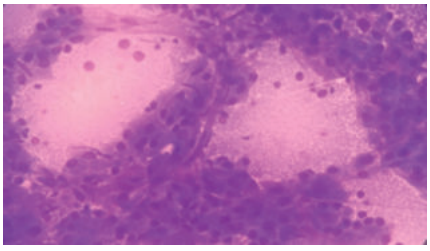
SITE	MALIGNANT	BENIGN	INFLAMMATORY	INADEQUATE	TOTAL
Liver	36	1	1	7	45
Gall Bladder	09	0	0	4	13
Ovary	22	4	0	1	27
Lymph node	8	0	1	1	10
Lung	2	0	0	1	3
Thyroid	0	4	0	0	4
Submandibular	0	1	0	0	1
Breast	1	0	0	0	1
Knee	0	1	0	0	1
Right axilla	1	0	0	0	1

Pelvic mass	7	0	0	0	7
Renal mass	2	0	0	0	2
Peritoneal mass	3	0	0	0	3
Iliac mass	1	0	0	2	3
Mass near eye	1	0	0	0	1
Lower rib	1	0	0	0	1
Pancreas	1	0	0	1	2
	95	11	02	17	125

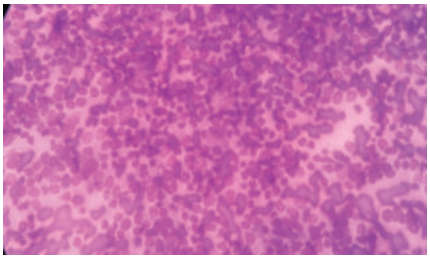
Serum levels of CA-125 were available in 18 cases of ovarian tumors out of which it was raised in 15 cases. Serum levels of AFP (Alpha feto-protein) were available in 32 cases of liver mass out of which it was significantly raised in (>400ng/ml) 12 cases. The single case of pancreatic adenocarcinoma had serum levels of CA19.9 as98U/ml.



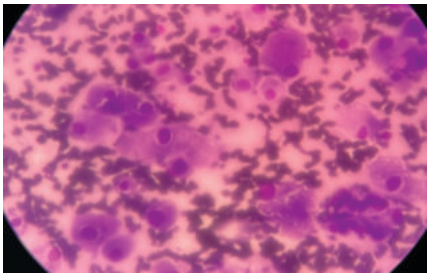
Gastrointestinal stromal cell tumor showing spindle cells in sheets. (MGG,400X)



Hepatocellular carcinoma showing neoplastic cells with endothelial rimming around cells. (MGG,100X)



Metastatic small cell carcinoma with sheets of small round cells showing nuclear moulding. (MGG,100X)



Renal cell carcinoma showing loosely cohesive sheets of clear cell with eccentric nucleus. (MGG,400X)

DISCUSSION

FNAC is cost effective, accurate and minimally invasive technique. FNAC under image guidance facilitates proper management of the patient presenting with intra-abdominal, intrathoracic and retro peritoneal lesions that are deep seated and are at inaccessible site. With this technique, probable diagnosis can be made before surgery and without subjecting patient to open biopsy and thus two staged surgical procedures can be avoided.(2)

The different tumor markers that can be used are CEA (adenocarcinoma), CA125 (ovarian carcinoma), CA19.9 (pancreatic carcinoma), PSA (prostatic adenocarcinoma). AFP is helpful in confirming the diagnosis of HCC and differentiating it from metastasis (6)

In the present study, the age range of patient was 21- 80 years. Similar findings were observed by Parahjuli et al (age range 19-83 years) (7) Singh and Kotwal (2) (age range 3-84 years) and Gupta et al (age range 26-70years)(8).

Females (62.4%) predominated over males (37.6%) in our study. However, the studies of Ahuja et al (9) and Kaur et al (4) presented with a male predomination.

In present study, inadequacy of sample was noted in 13.6% cases as compared to 8% as reported by Singh and Kotwal (2). We reported inflammatory pathology in 1.6% cases which is comparably low than reported by Philipose et al 9.4% cases (10). In our study, benign and malignant cases were 8.8% and 76%, respectively. These results are in concordance with those reported by Singh and Kotwal (2) (benign 20%, Malignancy 62.3% cases) and Philipose et al(10) (benign lesions 5.9%, malignant lesions 90.6%.)

In present study, most common diagnoses were malignant neoplasms as also presented by other studies like Tuladhar et al (11) and Jha et al (12). The maximum number of malignant lesions was observed in 41-70 years (95cases) which is similar to findings observed by Mukerjee et al (13) and Singh and Kotwal (2).

The most common malignant cases were observed in liver 36 cases in which maximum cases were metastasis to liver (26 cases), followed by in ovary 22(17.6%) cases, hepatocellular carcinoma 5 cases and adenocarcinoma 6 cases (4.8%) of the gallbladder that is comparable with the study of Philipose et al (10).

In our study 2 cases of renal cell carcinoma were observed, similar to Singh k. et al (2). While Mangal et al (14) observed 12 cases of RCC.

One case of adenocarcinoma of pancreas was diagnosed in our study while in Singh and Kotwal (2) observed two cases of adenocarcinoma of pancreas.

In our study 4 cases of benign thyroid lesion were observed similar to Wiest et al (15). In this study, FNA of gall bladder masses were performed in 13 patients out of them 9 had malignant lesion similar to Parveen et al(16).

In our study 2 cases of malignant lung lesions were observerd, similar to Rastogi et al (18) where 3 cases of malignant lung lesion present. However Gupta et al (8) and Singh and Kotwal et al (2) reported 12 cases and 15 cases of malignant lung lesion respectively.

In present study 3 cases of malignant peritoneal lesion were reported *similar to* Philipose et al *(10)* where 5 cases of malignant peritoneal lesions were observed.

We observed 7 cases of malignant pelvic lesion, which were more as compared to Philipose et al (10) study who observed 2 cases of malignant pelvic lesion.

CONCLUSION

Image guided FNAC is a simple outpatient procedure and an effective technique for diagnosis of deep seated, inaccessible lesions and it obviates need for surgical procedure for reaching at a diagnosis.

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