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Ultrasound Guided Aspiration Cytology at Tertiary Care Center- A Retrospective Study

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ABSTRACT
Introduction
Abdominal cavity masses are often non palpable, deep seated and margins of these lesions are often undetached which makes it difficult to assess their size and shape. Ultrasound guided fine needle aspiration is a safe, rapid, accurate and simple technique which can be used for cytological diagnosis of abdominal, pelvic masses and also for the confirmation of the suspected malignant masses in various locations.
Material And Method
This retrospective study was carried out in the Department of Pathology , RNT Medical College Udaipur , for a period of one year and three month (15 months) and involved 53 cases with clinically or ultrasonographically diagnosed abdomino-pelvic and neck masses .
RESULT
In our study, most of the patients were in the age group of 4^{th} to 6^{th} decade. Majority of cases belonged to 41-50 yrs age group (14 cases) followed by 51-60 year age group (12 cases). Most commonly involved organ was liver (54.7% cases) followed by ovary (13.20%) and Gall bladder (7.6%).
Conclusion
USG guided FNA is a rapid, reliable , sensitive , specific, cost effective , safe and easily available procedure with less severe form of complications.It helps in the diagnosis of palpable and nonpalpable lesions and reduces discomfort and morbidity.
Keywords:- *Ultrasound guided FNAC, Abdominal masses, benign, malignant*

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I. INTRODUCTION

Aspiration cytology is defined as a study of cells, obtained by a fine needle puncture of the mass.
Maryin and Ellis in 1930 first described the use of narrow gauged needle for tumor sampling(1).

The evaluation and diagnosis of intra-abdominal and intra-pelvic lesions which are deep seated, is a fairly difficult procedure. These lesions can present as palpable or non-palpable masses. These lesions can be benign, malignant, or inflammatory and distinction between them is vital for patient management. Imaging techniques may not always distinguish between benign and malignant lesions. Many inflammatory conditions such as tuberculosis and liver abscesses can be misleading to the radiologists[2]

Ultrasound guided fine needle aspiration is a simple, safe, rapid, accurate and economic procedure. It can be used for cytological diagnosis and confirmation ofthe suspected malignant masses in various locations. The greatest advantage of this procedure isthat it allows visualization of needle tip as it moves in the tissue and also we can guide the needle into lesionswhich are at critical anatomical sites.(3)

Different imaging modalities like radiography, ultrasound, computed tomography andmagnetic resonance imaging along play an important role in diagnosis of differentlesions. Among them ultrasonography is a very important diagnostic tool. It can detect as small as 1 cmlesion in critical anatomic areas, thus making sonography the first choice among guided interventionaldiagnostic procedures. Fine needle aspiration cytology can have a majorimpact on the management of patients, obviate diagnostic surgical procedures or expedite planning for therapy.

Ultrasound guided aspiration can be used for any mass in abdomen, mediastinum, thyroid, pelvis cervicalnodes, parathyroid and lung/pleura(4).

In this study, we present ultrasound guided aspiration cytology of various masses in abdominal, thyroid and neck region which is performed at a tertiary care hospital. The purpose of the present study was to know the pathological spectrum of lesions and to correlate the radiological findings with cytological findings obtained from USG-guided FNAC. It also analyzes the usefulness of ultrasound guided aspiration cytology in diagnosing various masses, classification of lesions according tothe organ involved.

II. Material And Method

This retrospective study was carried out in the Department of Pathology , RNT Medical College Udaipur for a period ofone year and 3 month (15 months) from April– 2019 to June 2020 and involved 53 cases with clinically or ultrasonographically diagnosed abdomino-pelvic and neck masses , who were referred for FNAC.

The relevant findings, clinical history, physical examination and radiological findings were obtained from the records in the cytology section of pathology department.

The aspirations were done by the pathologist in conjunctionwith a radiologist. The patients were subjected to an ultrasonographic evaluation to assess the origin of the mass andits relationship with the adjacent organs. A percutaneous FNAC of the mass was done under real-time USGguidance, while taking absolute aseptic precautions. A 20ml disposable plastic syringe and a 22 gauge needle were used. For deepseatedle.sions, a 20-22 gauge spinal needle was used. A trans-abdominal approach, by using the mostdirect route was made.

The standard FNAC procedure was followed. Each aspirate was smeared on an average of 3 to 5 slides. Then air dried, fixed in 95% alcohol and stained with Giemsa stain. Special stains were used wherever required. The FNAC diagnosis was correlated with clinicaland radiological information. The smears were classified as benign, malignant, and inconclusive. All inflammatorylesions were included under benign catergory.

III. Results

In the present study, USG guided FNAC was performed in 53 patients with masses in neck and intraabdomen-pelvic region of different etiology . This retrospective study was carried out in our pathology department, RNT Medical College, Udaipur (Raj.) from April 2019 to June 2020.

Table 1. Distribution of cases according to sex

Sex	Count of sex	%
F	27	50.94%
M	26	49.06%
Grand Total	53	100%

In our study, male and females were equally involved.

Table 2. Distribution of cases according to Age

Age Group	Count of age	%
1-10	1	1.89%
11-20	1	1.89%
21-30	2	3.77%
31-40	8	15.10%
41-50	**14**	**26.41%**
51-60	**12**	**22.64%**
61-70	**10**	**18.87%**
71-80	5	9.43%
Grand Total	53	100%

According to Table (2), most of the patients were in the age group of 4^{th} to 6^{th} decade. Majority of cases belonged to 41-50 yrs age group(14 cases) followed by 51-60 year age group (12 cases).

Table 3. Distribution of lesions according to site/ organ

Organ	Count of organ	%
Adrenal mass	1	1.9%
LymphNode	2	3.7%
Colon	1	1.9%
GB mass	**4**	**7.6%**
Iliac fossa mass	1	1.9%
liver mass	**29**	**54.7%**

lung mass	1	1.9%
ovarian mass	**8**	**15.10%**
Pelvic mass	1	1.9%
Peritoneal deposit	1	1.9%
Suprarenal mass	1	1.9%
Testis mass	1	1.9%
Thyroid mass	2	3.7%
Grand Total	**53**	**100%**

In present study, most common involved organ was liver (54.7% cases) followed by ovary (15.10%) and Gall bladder (7.6%).

Table 4. Distribution of cases according to cytology

Lesion	No of cases	%
Benign	10	18.87%
Malignant	43	81.13%
Grand Total	53	100%

In the present study, most of the cases were malignant in nature (81.13 % cases) and 18.87% cases were benign.

Table 5. Overall distribution of cases according to cytology findings

Row Labels	Count of diagnosis	Percentage
adrenal mass	**1**	**1.89%**
metstatic adenocarcinoma	1	-
cervical LN	**2**	**3.77%**
malignant epithelial neoplasm	1	-
TB	1	-
Colon	**1**	**1.89%**
granulomatous lesion - non caseous	1	-
GB mass	**4**	**7.54%**
Adenocarcinoma	3	-
metstatic malign. Epi. Lesion	1	-
Iliac fossa mass	**1**	**1.89%**
Adenocarcinoma	1	-
liver mass	**29**	**54.71%**
Mets of Adenocarcinoma	11	-
Degenerative changes	1	-
Ductal Ca	1	-
HCC	7	-
Inflammatory lesion	1	-
Malignant epithelial lesion	2	-
Malignant neoplasm	1	-
SCC	2	-
SCC/ lymphoma	1	-
Small round cell tumor	2	-
lung mass	**1**	**1.89%**

Adenocarcinoma	1	-
ovarian mass	**8**	**15.10%**
Adenocarcinoma	6	-
Dermoid cyst	1	-
Malignant lesion of ovary	1	
pelvic mass	**1**	**1.89%**
Reactive changes	1	-
peritoneal deposit	**1**	**1.89%**
Pseudomyxomaperitoni	1	-
suprarenal mass	**1**	**1.89%**
Necrotizing lesion	1	-
Testis mass	**1**	**1.89%**
Adenocarcinoma	1	-
Thyroid mass	**2**	**3.77%**
collidgoiter	2	-
Grand Total	53	100%

In the present study, out of 53 cases, 10 cases were benign in nature including 2 cases of colloid goiter, 1 dermoid cyst of ovary, 1 case of pseudomyxomaperitonii , 1 case of necrotizing lesion in suprarenal region, 1-1 case of reactive and inflammatory changes in liver.Out of 43 malignant cases , most common site was liver (29 cases) . Majority of cases were (11cases) metastatic deposits of adenocarcinoma followed by 7 cases of hepatocellular carcinoma, 2 cases of small round cell tumor, 2 cases of SCC, 2 cases of malignant epithelial lesion and 1 case of lymphoma.

IV. Discussion

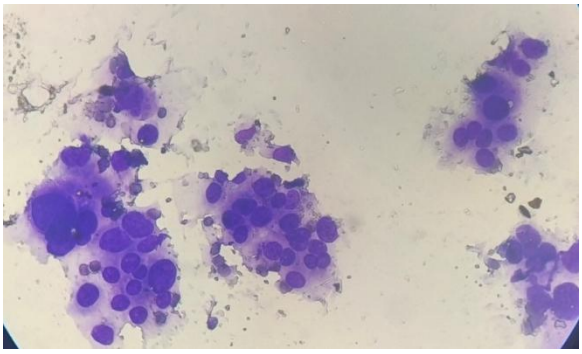
Radio-logically assisted FNA cytology of palpable and non-palpablel lesions offers the advantage of rapid and accurate diagnosis with a minimum of surgical intervention. (2)Ultrasound guided FNAC is a simple, safe , reliable , rapid, economical diagnostic procedure for estabilishing the diagnosis of various lesion and masses in various sites and organs. It can be used in various neoplastic and non-neoplastic diseases. [5].

In the present study, Out of a total of 53 cases, all were cytologically adequate, hence the diagnostic yield was 100%. This is higher and comparable to other studies[6], [7], [8]**.** In our study, male female ration is (M:F= 0.96 :1) in which female were slightly more affected than male.In present study , most of the patients were in the age group of 4^{th} to 6^{th} decade. Majority of cases were belonged to 41-50 years(14 cases) and 51-60 years (12 cases)which is quite similar to the study of Hemalatha A.L. et al.(9)

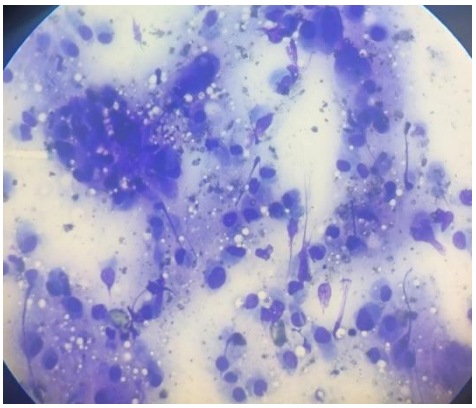
In the present study, it was observed that a majority were malignant lesions which comprised 64.5% lesions and the remaining 35.5% were benign and non-neoplastic lesions. This was almost similar to the study of Smith et al., [10] in which 66% were malignant lesions and 34% were benign/ non-neoplastic lesions.

In the present study, most common site of malignancy detected in guided FNA is liver (54.71%) followed by ovary and gallbladder, which is similar to the study of Glaxon JAet al. [11] where maximum number 31 cases (46.97%) were hepatic lesions.Among the liver masses, a majority of cases were metastatic deposits of adenocarcinoma which was concordant with the study of Pinto et al., [12] and disconcordant with the study of Hemalatha A.L. et al.(9) where the most common finding was hepatocellular carcinoma (40%). Though hepatocellular carcinoma is a very vascular tumor and is prone for a spontaneous rupture causing haemoperitoneum, no such complication was encountered in the present study.

No serious complication was encountered in the present study which was similar with the experience ofother authors. A very few patients reported mild pain for 1-2 days at the site of operation, no other complicationwas noted.



Picture 1. Metastatic deposits of Adenocarcinoma of liver (Geimsa Stain,400 X)



Picture 2. Adenocarcinoma of ovary(Geimsa Stain,400 X)

V. Conclusion

USG guided FNAC is an inexpensive,quick, reliable and easily available OPD based procedure with less number of severe forms of complications. It has a very important role in accurate diagnosis of palpable and non palpable deepseated lesions.. It helps in differentiating between inflammatory, benign and malignantlesions, and also in categorizing different malignant lesions.It can be utilized as a preoperativeprocedure for help in the management and in planning of appropriate surgical interventions.Interaction and a good cooperation between the pathologist and radiologist is important so as to obtain maximum diagnostic yield and increased overall accuracy.

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