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Diagnostic Performance of Ultrasound-Guided Fine Needle Aspiration Cytology in Diagnosis of Intra-Abdominal and Intra-Pelvic Masses-A Retrospective study

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***Aim**: The aim of our study was to analyze the usefulness of ultrasound guided fine needle aspiration cytology in the diagnosis of intraabdominal and pelvic masses. **Material and Methods**: The study included 70 clinically and radiologically suspected palpable and non-palpable intra-abdominopelvic lesions studied over a period of 1 year. Study was done on USG guided FNAC done in all the non-palpable lesion and for a few selected palpable lesions. Giemsa's and Papanicolaou's stains were used. **Results**: Cases were reported in age range of 2-78 years with a M: F of 1.1:1. There were 45 (64.2%) malignant, 22 (31.4%) benign and 3 (4.2%) inconclusive cases. Liver and gallbladder were most common involved sites. This study showed 100% specificity and 95% sensitivity for malignant lesions. **Conclusion**: USG guided FNA cytology is a simple and safe procedure. It can be utilized as a pre-operative procedure for the management of intra-abdominopelvic lesions.*

***Keywords:** USG guided FNAC, Intra-abdominal masses, Pelvic masses*

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I. Introduction

The evaluation of deep, abdomino-pelvic masses or focal lesions involving abdominal sites is often difficult an always remain as an enigma in surgical practice. Distinction between malignant and nonmalignant lesions an particularly inflammatorylesions is vital for patient management. Although distinction between malignant and nonmalignant lesions is often suspected from imaging techniques, the increasing use and sensitivity of radiologica techniques has led to the identification of relatively small lesions, which require the use of image guidance for reliable targeting**[1],.**Most of the abdomino-pelvicmasses are non – palpable and even if the are palpable, the idea of their size and shape and the extent of the lesion is not possible. Therefore, various imagin modalities like ,CT and USG are used as a guide for fine needle aspiration**[2]**. Fine needle aspiration cytology is well established diagnostic technique and is increasing in popularity as a means of diagnosing mass lesions in intraabdominal organs. Most studies have shown it as a highly sensitive, highly specific, accurate and a cost effective diagnostic procedure with a negligible complication rate.

II. Material And Methods

Intra-abdominal and pelvic organs including the liver, spleen, pancreas, stomach, gallbladder, the small and larg intestines, the omentum, mesentery, the retroperitoneum, kidney, adrenals, lymph nodes, soft tissues and the ovar were included in the study. Parietal swellings arising from the skin and the abdominal wall, the uterus, the cervix the prostate and the bone were excluded from the study. It was a retrospective study of cases done from January 2019 to December 2019.The aspirations were done by the radiologist in conjunction with a pathologist. The patients were subjected to a ultrasonographic evaluation to assess the origin of the mass an its relationship with the adjacent organs. A percutaneous FNAC of the mass was done under real-time US guidance, in the Department of Radiology, while taking absolute aseptic precautions, by the sonologist. A 20ml disposable plastic syringe and a 22 gauge needle were used. For deepseated lesions, a 20-22 gauge spinal needle of 9cm length was used. A trans-abdominal approach, by using the most direct route was made and the standard FNAC procedure was followed. Each aspirate was smeared on an average of four to five slides. The air dried and 95% alcohol fixed smears were prepared for Giemsa , Papanicolaou and H&E stains, respectively. Special stains were used wherever required. The FNAC diagnosis was correlated with clinical and radiological information. A total of 70 intraabdominopelvic lesions were studied.The smears were classified as benign, malignant, and inconclusive. All inflammatory lesions including abscess and tuberculosis were included under benign category.

III. Results

In the study period of 1 year from January 2019 to December 2019 ,2125 FNACs were done and out of these 345 (16.2%) were done under image guidance. Out of total 345 cases of USG guided FNACs , 70cases (20.22%) of abdomino-pelvic origin were included in this study of which 38 were males and 32 were females with a male: female ratio of 1.1:1. The age of the patients ranged from 4 years to 80 years.

Table 1 shows Age and sex distribution of cases
Table 2 shows Site of distribution the of abdomino-pelvic lesions
Table 3 shows Cytological categories
Table 4 shows Cytological diagnosis of intra-abdomino-pelvic lesions

Table 1 . Age and sex distribution of cases

Age in years	Male	Female	Total
<20	2	2	4
21-40	5	9	14
41-60	18	13	31
61-80	13	8	21
Total	38	32	70

Table 2.Site of distribution the of abdomino-pelvic lesions

Site	Number of cases	Percentage
Liver	37	52.8%
Gall bladder	11	15.7%
Right iliac fossa	9	12.8%
Pancreas	4	5.7%
Retroperitoneum	3	4.2%
Pelvis	1	1.4%
Left iliac fossa	2	2.8%
Renal	3	4.2%
Total	70	100%

Table 3. Cytological categories

Diagnosis	Number of cases	Percentage
Benign	22	31.4%
Malignant	45	64.2%
Inconclusive	03	4.2%
Total	70	100%

Table 4: Cytological diagnosis of intra-abdomino-pelvic lesions

	Benign	No. of cases	Percentage	Malignant	No.Of cases	Percentage
Liver	Abscess	8	11.9%	Deposits of Adenocarcinoma Hepatocellular carcinoma Deposits of Neuroendocrine Carcinoma	16 6 4	23.8% 8.9% 5.9%
Gall bladder	Inflammatory	5	7.4%	Adenocarcinoma	5	7.4%
Right iliac fossa	Inflammatory Tuberculosis	4	5.9%	Adenocarcinoma	5	7.4%
Pancreas	Cysts	2	2.9%	Neuroendocrine carcinoma Adenocarcinoma	1 1	1.4% 1.4%
Retroperitoneum				Adenocarcinoma NHL	2 1	2.9%
Left iliac fossa	Inflammatory	1	1.4%	Adenocarcinoma	1	1.4%
Pelvis	Inflammatory	1	1.4%	Seminoma	1	1.4%

Renal	Cysts	1	1.4%	Renal Cell Carcinoma	2	2.9%
Total [67 cases]		22	32.8%		45	67.1%

IV. Discussion

The diagnostic confirmation is of utmost importance for rapid and appropriate planning of management of cases.Differentiation between benign and malignant disease is at times vital, to avoid an exploratory laparotomy especially in advanced unresectable malignant cases. Ultrasound guided FNAC is a rapid, accurate, economical and a safe diagnostic procedure that can be used in various neoplastic and non-neoplastic diseases. As a diagnosis is rapidly available on FNAC, the appropriate medical or surgical therapies can be started earlier, thus avoiding unnecessary, expensive and often invasive diagnostic procedures**.[3]**In present study , FNAC gave definite conclusive diagnosis in 90.5% of cases which is higher and comparable t other studies done else wherein the past**.[4,5,6]**

Our study is comparable with study done by Nautiyal S et al in 2004,who found a diagnostic yield of 64.81% wit direct aspiration of the palpable lumps and a diagnostic yield of 93.06% with USG guided FNAC which was done for both palpable and non-palpable lesions[**2]**.

The age incidence in the present study ranged from 4 years to 80 years, with a majority of the cases being in the ag group of 40-60 years which was comparable to the results which were obtained by Zawar MP., et al**[7]**an Shamshad et al.[**8]** The male to female ratio of 1.1:1 was in accordance with the observations which were made in the studies b Zawar MP et al[**7**], Govind Krishna et al[**9**], Aftab A Khan et al,[**10]**and Ennis and Mac Erlean[**11]**, showed a male preponderance. Liver was the common sites for FNAC in this study as shown in table I and II which is comparable to the studie done by Sheikh et al and Adhikari RC et al[**6,12**]Zawar M.P. et al,[**7]**.Liver was also the most common site o aspiration performed in the abdomen in a study done by J Nobrega et al. [**13]** In the present study, it was observed that a majority were malignant lesions which comprised 64.2% lesions and the remaining 34.1% were benign and non-neoplastic lesions. This was almost equal in comparison to the study of Smith e al., [**14]** in which 66% were malignant lesions and 34% were benign/ non-neoplastic lesions Liver abscess was most common benign lesion followed by tuberculosis of large gut and benign pancreatic cysts.

In the present study, adenocarcinomas were the most common malignant cell type (62.5%), followed by renal cel carcinoma and neuroendocrine carcinomas (5.20%), This was in accordance with the observations which were made by Shamshad et al[**8**]and Aftab A. Khan et al,[**10**].In the liver, the most common malignant lesion was metastatic carcinoma which is comparable to the western literature, in which the most common hepatic malignancy was metastatic carcinoma[**11,13,15,**].The observations of the present study were notsimilar to those of Indian studies where hepatocellular carcinoma constituted the most common hepatic malignancy.[**8]**,but are comparable to the two studies done earlier in the Kashmir valley.[**8,16]**.In the present study, we observed 4.2% inconclusive smears which was lower than the observations made by Shamshad et al[**8**]and Aftab A. Khan et al[**10**]who observed 6.5 and 6% unsatisfactory smears, which could be attributed to many reasons and depends on many factors like location size, accessibility, vascularity necrotic component, consistency, nature and histologic type of the lesion. Biradar et al,[**17**]had observed more unsatisfactory smears (14%) as compared to those in our study Although few studies have reported complications like mild local pain, bleeding and tumour seeding of the needl tract, a vast amount of literature supports the safety of FNAC. In present study we did not find any complication except mild pain at the time of needle puncture. There was no report on complications as a result of FNAC in the 2 papers which amounted to around 20,000 patients, including those of the present study[**18]**.

V. Conclusion

USG guided FNAC, in expert hands, being a cheap,quick, reliable and easily available OPD based procedure and with less number of less severe forms of complications, has a very important role in accurate diagnosis of any deep seated accessible mass lesions.Intra-abdominal FNA is a relatively simple, economical, and safe procedure for the diagnosis of intra-abdominal lesions. It helps in differentiating between inflammatory, benign and malignant lesions, and also in categorizing different malignant lesions. Intra-abdominal FNA is a reliable, sensitive and specific method with a high diagnostic accuracy for the diagnosis of malignant lesions. It can be utilized as a preoperative procedure for the management of all intra-abdominal-pelvic lesions.

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