



USG guided fine needle aspiration cytology of intra-abdominal and pelvic masses in Kashmir: A study at tertiary care hospital

Tasleem Ahmad Reyaz, Farooq Summyia, Niyaz Isma, Bhat Nazia, Siddique Adil, Khanday Sameena, Bashir Humaira, Nazir Naila and Beigh Ambreen

*Department of Pathology, GMC, Srinagar
Corresponding email: summiyafarooq@gmail.com*

ABSTRACT

The evaluation of deep, abdomino-pelvic masses or focal lesions involving abdominal sites is often difficult and always remain as an enigma in surgical practice. Distinction between malignant and nonmalignant lesions and particularly inflammatory lesions is vital for patient management. Although distinction between malignant and non-malignant lesions is often suspected from imaging techniques, the increasing use and sensitivity of radiological techniques has led to the identification of relatively small lesions, which require the use of image guidance for reliable targeting[1]. In a majority of cases, the diagnosis which is obtained by FNAC, is the substitute for surgical procedures like diagnostic laparotomy[2].

INTRODUCTION

The evaluation of deep, abdomino-pelvic masses or focal lesions involving abdominal sites is often difficult and always remain as an enigma in surgical practice. Distinction between malignant and nonmalignant lesions and particularly inflammatory lesions is vital for patient management. Although distinction between malignant and non-malignant lesions is often suspected from imaging techniques, the increasing use and sensitivity of radiological techniques has led to the identification of relatively small lesions, which require the use of image guidance for reliable targeting[1]. In a majority of cases, the diagnosis which is obtained by FNAC, is the substitute for surgical procedures like diagnostic laparotomy[2]. Most of the abdomino-pelvic masses are non – palpable and even if they are palpable, the idea of their size and shape and the extent of the lesion is not possible. Therefore, various imaging modalities like ,CT and USG are used as a guide for fine needle aspiration[3]. Fine needle aspiration cytology is a well established diagnostic technique and is increasing in popularity as a means of diagnosing mass lesions in intra-abdominal organs. Most studies have shown it as a highly sensitive, highly specific, accurate and a cost effective diagnostic procedure with a negligible complication rate.[1,4-10]. The FNA cytology was shown to be 100% specific for diagnosis of malignancy [5,8]. The non –availability of CT, coupled with the higher incidence of advanced malignancy due to public awareness and overburdened surgical units with limited resources require the USG – guided FNAC procedure for cancer management in developing countries like India.[6,11,12]. The aim of our study was to analyze the usefulness of ultrasound guided fine needle aspiration cytology in the diagnosis of intra-abdominal and pelvic masses. Our objectives were to assess the cytomorphological features, age and sex distribution of the patients with abdomino-pelvic lesions, to classify the malignant lesions according to their celltype.

MATERIALS AND METHODS

This study was carried out in the Department of Pathology Government Medical College Srinagar for a period of one year (12 months) from 1 Jan– 2015 to 31 dec 2015 and involved 106 cases with clinically or ultrasonographically diagnosed abdomino-pelvic masses, who were referred for FNAC.

Intra-abdominal and pelvic organs including the liver, spleen, pancreas, stomach, gallbladder, the small and large intestines, the omentum, mesentery, the retroperitoneum, kidney, adrenals, lymph nodes, soft tissues and the ovary 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. The aspirations were done by the radiologist in conjunction with a pathologist. The patients were subjected to an ultrasonographic evaluation to assess the origin of the mass and its relationship with the adjacent organs. A percutaneous FNAC of the mass was done under real-time USG guidance, in the Department of Radiology, while taking absolute aseptic precautions, by the shortest route to the site, as was suggested by the sonologist. A 20ml disposable plastic syringe and a 22 gauge needle were used. For deep-seated 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. The smears were classified as benign, malignant, and inconclusive. All inflammatory lesions including abscess and tuberculosis were included under benign category.

RESULTS AND DISCUSSION

In the study period of 1 year 4677 FNACs were done and out of these 426 (9.10%) were done under image guidance. Out of total 426 cases of USG guided FNACs 106 (24.88%) were of abdomino-pelvic origin and were included in this study of which 58 (54.71%) were males and 48 (45.28%) were females with a male: female ratio of 1.2:1. The age of the patients was ranging from 4 years to 80 years with the mean±SD (51.05±16.65). (Table 1)

Table 1 . Age and sex distribution of cases(n= 106)

Age in yrs	Male(n=58)	Female(n=48)	Total	%age
<20	3(5.17%)	4(8.33%)	7	6.6
21-40	8(13.79%)	15(31.25%)	23	21.69
41-60	29(50%)	21(43.75%)	50	47.16
61-80	18(31.03%)	8(16.66%)	26	24.52
Total	58	48	106	

In present study liver was the most common site of FNAC 32 cases (30.18%) followed by gallbladder 18 cases (16.98%), right iliac fossa 12 cases(11.32%), pancreas and retroperitoneum 10 cases each (9.43%). (Table 2).

Table 2.Site of distribution the of abdomino-pelvic lesions (n=106)

Site	Number of cases	Percentage
Liver	32	30.18%
Gallbladder	18	16.98%
R Iliac fossa	12	11.32%
Pancreas	10	9.43%
Retroperitoneum	10	9.43%
Pelvis	9	8.49%
L Iliac fossa	9	8.49%
Renal	6	5.66%
Total	106	

Out of total 106 aspirates 83 (78.30%) were categorized as malignant, 13(12.26%) as benign and 10(9.43%) as inconclusive because as radiologically it was suspicious of malignancy and the smears were either acellular and / or contained normal cells and blood only (Table 3).

Table 3. Cytological categories (n=106).

Diagnosis	Number of cases	Percentage
Benign	13	12.26%
Malignant	83	78.30%
Inconclusive	10	9.43%
Total	106	100%

Most of the benign lesions were inflammatory 5 cases (5.20%) followed by liver abscesses 3 cases(3.12%), tuberculosis 2 cases(2.08%)pancreatic cysts 2 cases(2.08%), and renal cyst 1 case(1.04%).Among malignant lesions adenocarcinomas were most lesion 60 cases(62.5%) followed by renal cell carcinoma, neuroendocrine carcinoma, pleomorphic sarcoma 5 cases (5.20%) each, seminoma, NHL 2 cases (2.08%) each and dysgerminoma 1 case (1.04%).Among adenocarcinomas 39 cases (65%) were primary and 21 cases(35%) were secondary in origin. In total 5 cases of neuroendocrine carcinomas 4 (80%) were primary and 1 case was secondary in origin. Among all malignant lesions gallbladder adenocarcinomas and pelvic malignancies were more common in females while liver, iliac fossa and retroperitoneal lesions were more common in males. Pancreatic tumors were equally common among both sexes.(Table 4).

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

Benign	no of cases	%	Malignant	no of cases	%	
1.liver(28 cases)	Abscesses	3	3.12	Deposits of adenocarcinoma	21	21.87
				Hepatocellular carcinoma	3	3.12
				Deposits of neuroendocrine carcinoma	1	1.04
2.Gallbladder(15 cases)	Inflammatory	1	1.04	Adenocarcinoma	14	14.58
3.R iliac fossa(12 cases)	Inflammatory	2	2.08	Adenocarcinoma	8	8.33
	Tuberculosis	2	2.08			
4.Pancreas(9 cases)	cysts	2	2.08	Neuroendocrine carcinoma	4	4.16
				Adenocarcinoma	3	3.12
5.Retroperitoneum(9 cases)				Adenocarcinoma	4	4.16
				Pleomorphic sarcoma	3	3.12
				NHL	2	2.08
6.L iliac fossa(8 cases)	Inflammatory	1	1.04	Adenocarcinoma	7	7.29
7.Pelvis(9 cases)	Inflammatory	1	1.04	Seminoma	2	2.08
				Dysgerminoma	1	1.04
				Adenocarcinoma	3	3.12
				Pleomorphic sarcoma	2	2.08
8.Renal(6 cases)	Cyst	1	1.04	Renal cell carcinoma	5	4.25
Total 96(cases)		13	13.54		83	86.45

Inconclusive results were seen in 10 cases (9.43%) out of these 4 cases(40%) were from liver, 3 cases (30%) from gall bladder ,1 case (10%) each from left iliac fossa, retroperitoneum and pancreas.

No significant complications were observed except minimal discomfort at the time of needle puncture.

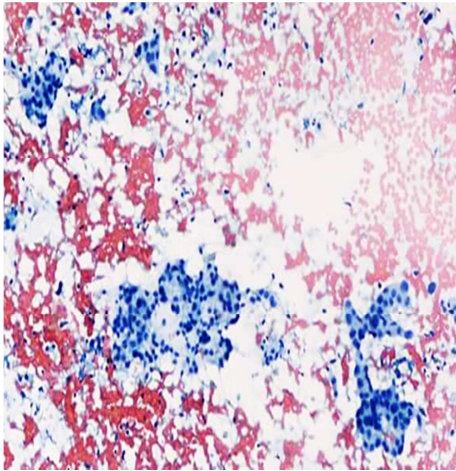


Fig 1 Microphotograph of aspirate from liver showing deposits of adenocarcinoma (PAP stain 100X)

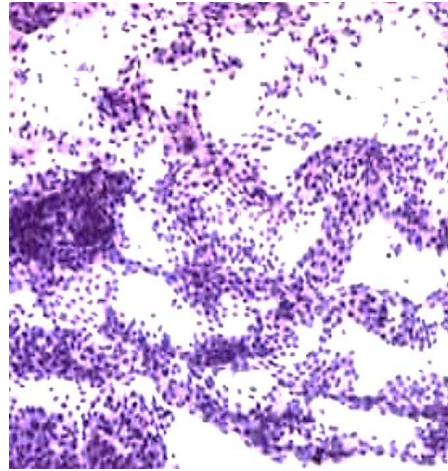


Fig 2 Microphotograph of aspirate from gallbladder showing papillary adenocarcinoma (MGG Stain 100X)

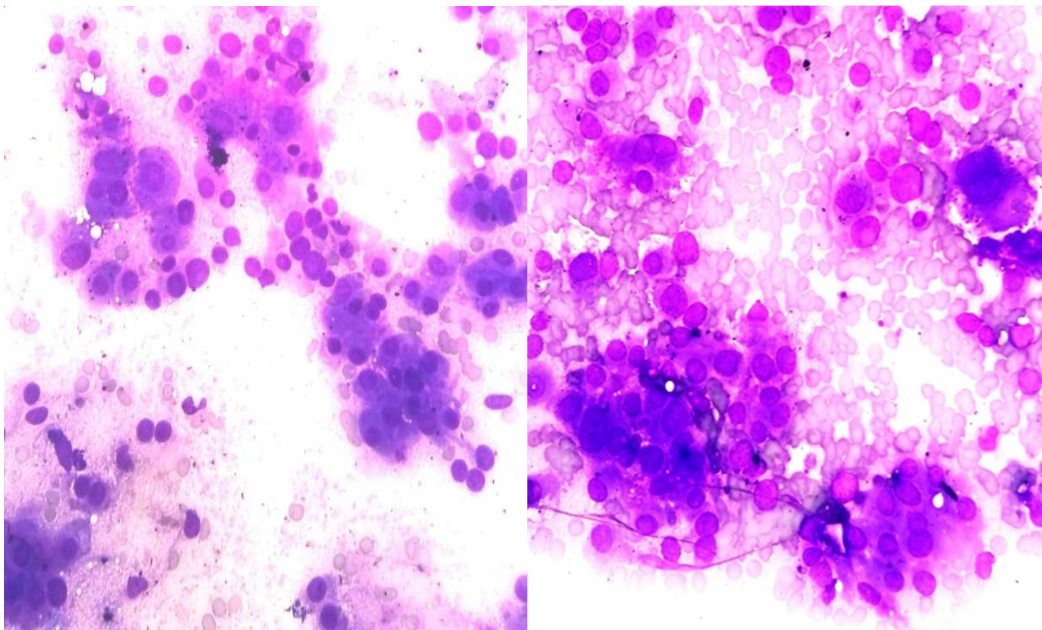


Fig 3A&3B Microphotographs of aspirate from liver showing cells with prominent inclusion like nucleoli HCC(MGG Stain 100X)

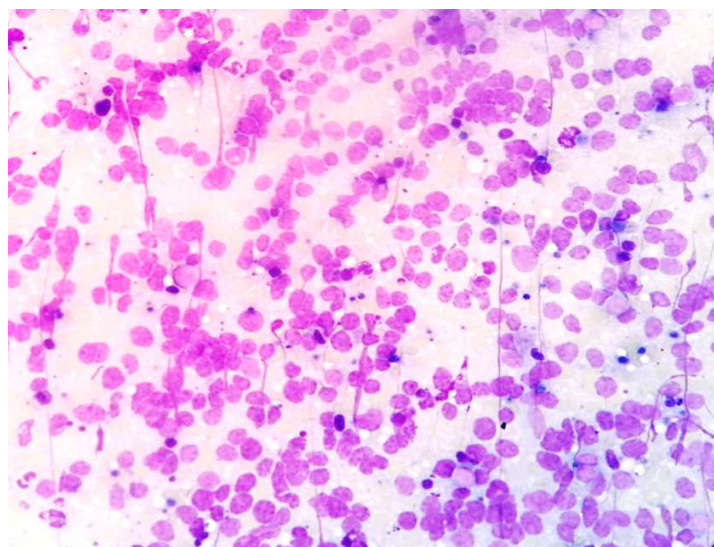


Fig 4 Microphotographs of aspirate from retroperitoneum showing atypical lymphoid cells –NHL (MGG 100X)

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.[13]

In present study , FNAC gave definite conclusive diagnosis in 90.5% of cases which is higher and comparable to other studies done else wherein the past.[14-16]

Our study is comparable with study done by Nautiyal S et al in 2004, who found a diagnostic yield of 64.81% with 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[3].

The age incidence in the present study ranged from 4 years to 80 years, with a majority of the cases being in the age group of 40-60 years which was comparable to the results which were obtained by Zawar MP., et al[4] and Shamshad et al.[17]

The male to female ratio of 1.2:1.3 was in accordance with the observations which were made in the studies by Zawar MP et al[4], Govind Krishna et al[10], Aftab A Khan et al,[2] and Ennis and Mac Erlean[6], 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 studies done by Sheikh et al and Adhikari RC et al[16,18] Zawar M.P. et al,[4]. Liver was also the most common site of aspiration performed in the abdomen in a study done by J Nobrega et al. [5]

In the present study, it was observed that a majority were malignant lesions which comprised 78.30% lesions and the remaining 12.26% were benign and non-neoplastic lesions. This was higher in comparison to the study of Smith et al., [19] 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 cell carcinoma and neuroendocrine carcinomas (5.20%). This was in accordance with the observations which were made by Shamshad et al[17] and Aftab A. Khan et al,[2]. 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[5,6,12,20,21]. The observations of the present study were not similar to those of Indian studies, where hepatocellular carcinoma constituted the most common hepatic malignancy.[4], but are comparable to the two studies done earlier in the Kashmir valley.[2,17]. In the present study, we observed 9.43% inconclusive smears, which was higher than the observations made by Shamshad et al[17] and Aftab A. Khan et al[2] 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,[22] 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 needle 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 20 papers which amounted to around 20,000 patients, including those of the present study[23].

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 pre-operative procedure for the management of all intra-abdominal-pelvic lesions.

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