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Original Research Paper

Evaluation Of Role Of USG-Guided FNAC In Intra-Abdominal Masses

Medical Science

KEYWORDS : Fine needle aspiration cytology, Cytohistocorrelation , Intraabdominal masses

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ABSTRACT

Background – FNAC of intraabdominal Masses is a routine procedure now a days . Confident diagnosis can be made in combination with other modalities such as USG, CT Scan. It can be substitute to for surgical procedure like diagnostic laparotomy.

Aims- To evaluate Utility and diagnostic accuracy of FNAC in diagnosis of intra-abdominal masses

Materials and Methods: The study included 273 intraabdominal masses which were detected clinically and raiologically .USG guided FNAC were done

Result: Out of 217 adequate abdominal aspirate, 179 (82.4%) were found to be malignant and 7 were ,(3.2%), benign in nature, 19 (8.8%) masses were inflammatory in origin , in 12 (.5.6%) aspirates, the cells were suspicious of malignancy. In present study most common abdominal malignancy was secondaries in liver 29(16.2%), followed by hepatocellular carcinoma 27(15.0%). Out of 29 cases of secondatory metastasis, 9 (31.2%) were from secondaries of carcinoma of bowel .

In this study , overall diagnostics accuracy of 98.3 % was achieved by Ultrasound guided FNAC with sensitivity of 98 % and specificity of 100 %. Predictive value for positive and negative were found to be 100%and 87.50% respectively .

Conclusion: FNAC of intrabdominal masses is simple, economical and safe procedure with high sensitivity, specificity , diagnostic accuracy and can be used as routine preoperative procedure for diagnosis and management.

1) INTRODUCTION

USG guided FNAC now a days routine procedure. FNAC Provides a reliable cost effective , rapid , minimum risk , highly sensitive and specific diagnostic tool. Many a time definite diagnostic is possible with cytology alone and histopathological confirmation is not required. This is very helpful especially in inoperable cases of malignancy where cytological diagnosis is sufficient basis for rapid initiation of palliative radiotherapy or chemotherapy . It can also be performed as OPD procedure .In addition to High degree of accuracy and safety obtained with FNACs, cost saving in terms of avoiding unnecessary operation, decreasing the number of diagnostics tests and reducing hospital stay is obtained . Confident diagnosis can be expected in over 80 % of cases including lesion as small as 0.5 cm. FNAC of abdominal masses is well established technique but its potential is yet to exploited completely due to difficulty in accessing the lesion and limited knowledge of cytomorphological details . Blind aspiration have the drawback of poor lesion localization and therefore low diagnostics accuracy especially deep seated , impalpable and small lesion .Advances in radiological technique like, Ultrasound , Fluroscopy, CTscan and MRI have opened vast opportunities for FNAC of intraabdominal Masses , which are not easily amenable to surgical biopsy . Radiologically guided aspiration has increased the adequacy and representativeness of the sample .In addition to good quality preparation, the use of ancillary technique like fluorescent microscopy, electron microscopy, immunocytochemistry and cytogenetics has significantly increased the potential for specific diagnosis of intra abdominal masses.

2).MATERIAL AND METHODS:

The present study was carried out in department of pathology Government Medical college , Miraj .During the period of 2 years (January 13-decembar 14) , 273 patient were evaluated to assess the accuracy of radilologically guided FNAC of intraabdominal and retroperitonial masses.

In all cases, percutanious fine needle aspiration of intraabdominal masses were performed with Ultrasound guidance ,in order to obtain diagnosis.

Aspirates were categorized as : 1) Malignant – Primary/ secondary 2)Benign 3)Inflammatory 4) Suspicious of malignancy 5) Inadequate – on account of blood, or necrotic material obscuring cellular details, or scant cellullarity.

3)RESULT:

Out of 273 Patient , 158 were males, 115 were females . The youngest patient was 20 days male baby and oldest patient in the series was an 85 years old male. Maximum number of patient belonged to age group 41-50 years, comprising 23.01 %. as shown in Table No. 1.

Table 1: Showing age and sex distribution in patient with intrabdominal masses

Age group in years	Males	%	Female	%	Combined male and female	Combined % male and female
0-10	12	7.59	10	8.69	22	8.05
11-20	11	6.96	10	8.69	21	7.69
21-30	24	15.18	10	8.69	34	12.45
31-40	18	11.39	16	13.91	34	12.45
41-50	29	18.35	34	29.56	63	23.07
51- 60	37	23.41	20	17.39	57	20.87
61-70	25	15.82	13	11.30	38	13.91
71-80	1	0.63	2	1.73	3	1.09
81-90	1	0.63	0	0	1	0.36
	158		115		273	

The most common clinical complaint with intraabdominal masses were lump in abdomen, pain in abdomen , Other complaint were waight loss and malaise, fever, yellowness of eyes, malena, vomiting, hematuria, lymphadenopathy ,increase in size of lump as shown in Table No 2

Table 2: Showing clinical complaints of intrabdominal masses

Clinical complaint	No of Patient	%
Lump in Abdomen	215	78.78
Pain in abdomen	176	64.46
Increase in size of Lump	131	47.9
Waight Loss and malaise	112	41.02
Fever	97	35.53
Yellowness of Eyes	36	13.8
Malena	37	13.55
Vomiting	38	13.91
Hematuria	21	7.69
Lymphadenopathy	2	0.73

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The most common sites of origin of intraabdominal masses were liver 97(35.53%), Ovaries 43(15.75%), Retroperitonium 42(15.38%), Bowel 30 (10.985), Kidney 26(9.52%), Gall bladder 11(4.02%), urinary bladder13(4.76%). Spleen 6(2.19%), pancreas 5 (1.83%). as shown in Table No 3.

Table 3: showing specific organ of origin

Organ of origin	No of patient	%
Liver	97	35.53
Bowel	30	10.98
Ovary	43	15.75
kidney	26	9.52
Retroperitonium	42	15.38
Pancreas	5	1.83
Gall Bladder	11	4.02
Spleen	6	2.19
Urinary Bladder	13	4.76

Out of 217 adequate abdominal aspirate , 179(82.4) were found to be malignant and 7 (3.2% benign in nature , 19 (8.8%) masses were inflammatory in origin and in 12(5.6 %) aspirates , the cells were suspicious of malignancy, as shown in Table no 4.

Table 4 : Showing categorization of adequate aspirate

Nature of llesion	Total no of cases	percentage
Malignant	179	82.4
Benign	7	3.2
Suspiicious	12	5.6
Inflammatory	19	8.8

In our study most common abdominal malignancy was secondary's in liver 29(16.2) followed by hepatocellular carcinoma 27(15.0%) as shown in Table no-5.

TABLE 5 : Showing Cytological analysis of Malignant abdominal masses

Cytological diagnosis	No. of patient	%
Secondary metastasis in liver	29	16.2
Hepatocellular carcinoma	27	15.0
Adenocarcinoma ofbowel	13	7.2
Germ cell tumor retroperitonium	12	6.7
Germ cell tumor overy	8	4.46
Adenocarcinoma of overy	13	7.2
Renal cell carcinoma	9	5
Wilms tumor	7	3.9
Adenocarcinoma Gall Bladder	7	3.9
Squamous cell carcinoma urinary bladder	4	2.2
Transitional cell carcinoma	3	1.6
Small round cell tumor? wilms? neuroblostoma	5	2.79
Malignant mesenhymal tumor retroperitonium	3	1.6
Secondary retroperitoneal lymph node	6	3.35
Gastrointestinal stromal tumor	3	1.6
Adrenocortical tumor	1	0.5
Hepatoblastoma	1	0.5
Adenocarcinoma of pancreas	3	1.6
Solidcystic papillary tumor pancreas	1	0.5
pheochromocytoma	1	0.5
Nonhogkin lymphoma retroperitonium	4	2.23
Undifferentiated Malignancy	19	10.6
Total	179	100

Table 6 : Showing distribution of metastatic tumors in liver

Secondaries in Liver	No of cases	%
Primery site known		
Adenocarcinoma of Bowel	9	31.2
Squamous cell carcinoma of bladder	2	6.9
Adenocarcinoma pancreas	1	3.4
IDC Breast	1	3.4
Carcinoma Lung	1	3.4
Pheochromocytoma	1	3.4
Carcinoid	1	3.4
Squamous cell carcinoma rectum	1	3.4
Primery site not known	12	41.3

As shown in Table no 6. Out of 29 cases of secondary metastasis seen, an attempt was made to identify primery tumor site, considering the clinical history, radiological finding and cytological features . In 17 cases (58.7%). Primery site was ascertained . Out of these 9(31.2) were secondary's of carcinoma bowel , 2 (6.9%) were squamous cell carcinoma of bladder, 1(3.4%) each from adenocarcinoma of pancreas , intraductal carcinoma of breast, carcinoma of lung , pheochromocytoma , squamous cell carcinoma of rectum . In 12 cases primery site could not be determined.

Nonspecific inflammation was commonest inflammatory lesion followed by tuberculosis.(shown in Table no 7).

Table No.7 : Showing Cytological diagnosis of Inflammatory masses

Cytological diagnosis	No of cases	%
Nonspecific Inflammation	9	47.36
Tuberculosis	8	42.12
Chronic Granulomatous Inflammation	1	5.26
Parasitic (Hydatic Cyst)	1	5.26
Total	19	100

Table 8 : Showing Cytohistopathological correlation

Organ	Total no of cases	No of HPE available	No of cases consistent	No of cases inconsistent
Liver Malignant NonMalignant	67/3(suspicious) 4	3 1	3 1	0 0
Retroperitonium Malignant Nonmalignant	26 10	9 4	9 4	0 0
Bowel Malignant Nonmalignant	20/2(suspicious) 2	12 1	12 0	1 (Adenocarcinoma)
Gall Bladder Malignant NonMalignant	0 4	0 0	0 0	0 0
Spleen Malignant Nonmalignant	0 4	0 0	0 0	0 0
Kidney Malignant Nonmalignant	22/2(suspicious)	9 0	9 0	0 0

Ovary Malignant NonMalignant	22/2(suspicious) 5	6 1	6 1	0 0
Urinary Bladder Malignant Nonmalignant	9/2(suspicious) 0	6 0	6 0	0 0
Pancreas Malignant NonMalignant	4/1(suspicious) 1	1 0	1 0	0 0
Total	217	58	57	1

Out of 58 cases where histopathological correlation was available , in 1 case cytological diagnosis was inconsistent with histologic diagnosis.(As shown in Table No 8).A 4X4 cm lesion arising from bowel reported as inflammatory turned out to be adenocarcinoma on histopathology.

No major complication were encountered in our study. The most common minor complication was pain and tenderness at aspiration site for more than 24 hour,. in 10 cases which subsided after administration of analgesics.

4) DISCUSSION :

FNAC is time honoured and tested technique for quick and reliable diagnosis. The success rate of radiologically guided FNAC in abdominal mass depends on various factors like 1) Imaging pattern of lesion eg. Hyperechoic or hypoechoic echo pattern in abdominal lesion and the vicinity of the lesion to vital structures 2)Type of needle used 3)Size and location of lesion 4) Experienced cytopathologist

The maximum number of patient belonged to age group of 40 – 60 years (43.9) .The aveage age incidence has been quoted as 48 years (droese et all), (2) 50 years (reddy)(3) , 60 years (4)). The increased incidence above age of 40 years , owes the fact that suspected metastasis, forming the major indication of FNAC is more common in this age group .

Maximum number of guided aspiration were from liver accounting for 97 cases.(35.53%). Of these , 74 were adequate for interpretation , 27 were hepatocellular carcinoma , 29 were secondary metastasis, 1 was hepatoblastoma, 1 was hyadatid cyst and 2 were liver abscesses. Remaining 14 were undifferentied malignancy .Average age of 97 cases with liver disease was 45 years. Metastatic adenocarcinoma was commonest malignancy in secondary metastasis 9 cases, 31.2 %), followed by hepatocellular carcinoma , a finding in accordance with to that reported by Whitlach et al (5) and Wilson et al (6)

Zarger et al (7) states that most common indication for fine needle aspiration biopsy is to confirm carcinoma of gall bladder or liver.

The histologic correlation was obtained in 59 (27.1%) out of 217 adequate aspirate. This figure is lower than quoted by other author.(2, 8,9,10,11)

No serious complication were encounterd in this study , however in 1 patient suspected of hepatocellular carcinoma , bleeding developed which was properly controlled by reinsertion of stellet and local compression for 10 minutes. Few or no complication were reported by most of other workers .(12,13,14,15,16)

Different authors reported occasional major complication of FNAC of abdominal masses. This include Pancretitis(17), needle track seeding of malignancy(18), and even death(17, 19, 20 .) Overall incidence of 0.5-1.5 % complications were reported by charboneau et al (21) in their study of 1000 radio logically guided biopsies of various body sites.

Our study showed sensitivity -98%, specificity-100%, overall accuracy 98.3%, predictive value of positive result -100%, predictive value of negative result- 87.5 %..These result are comparable to that achieved by various authors in table No .10 .(22, 23, 24, 25, 26)

Table 9: Statistical result –Comparative result

study	No of FNACs	Sensitivity	Specificity	Diagnostic Accuracy %
Sundaram et al, 1982	204	96.3	100	97
Lees et al1985	454	77	100	83.95
Civardi et al 77 1988	---	95.6	100	97.6
Govind Krishna et al 13 ,1993	500	71.4	55.6	77.5
Joao Nobrega et al7,1994	236	87	100	100
Aftab A Khan et al4,1995	50	94	100	94
Nautiyal Set al5, 2004	72	-	-	87.5
Shamshad et al17,2007	200	94.11	100	95.7
Zawar MPet al 6,2007	40			90
Sidhalingreddy et al 2011	245	94.1	100	96.5
Present study	273	98	100	98.3

Thus from present study, it is evident that radiologically guided FNAC is a technique with high degree of accuracy, sensitivity, and specificity. With this technique higher yield of diagnostically adequate smears is obtained. It also has good predictive value for both positive and negative result.

5) CONCLUSION :

The present study comprised of ultrasound guided percutanious fine needle aspiration biopsies of abdominal masses in 173 patient who were clinically suspected of neoplastic disease (either benign or malignant)or inflammatory .

Suspected metastasis was most common indication for fine needle aspiration followed by primery tumors and infection . The present study stressed upon the importance of correlation between the clinicoradiologic impression and cytologic diagnosis. Corelation were obtained in 213 cases . FNAC changed clinicoradiologic diagnosis in 4 cases.

A cytohostopathologic correlation was obtained in 58 cases.

In this study, overall accuracy of 98.3 % was achieved by Ultrasound guided FNAC with sensitivity of 98 % and specificity of 100 %. Predictive value for positive and negative was found to be 100% and 87.50% respectively .

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The advantages of ultrasound guided fine needle aspiration cytology are:

1. USG Guided FNAC is of immense value in localization particularly in the aspiration of small , non palpable and deep seated abdominal masses
2. It provides an excellent imaging of precise tumor location, nature of lesion and its organ of origin .
3. It aids in planning a safe route of aspiration, by direct visualization of lesion its proximity to vital structures such as blood vessels, nerve. It prevents inadvertent puncture of pleura, intestine , gall bladder ,bile duct etc. thus minimizing the complication associated blind non guided FNAC .
4. Preoperative imaging is important in ascertaining the most representative area of for aspiration and in obtaining FNAC in certain condition .(e .g .hydronephrotic kidney)
5. It allows an accurate placement of needle into the lesion and precise visualization is possible .
6. It allows an accurate guidance of needle into the wall of lesion rather than into its centre which is usually necrotic due to malignancy or infection .
7. Accurate placement of lesion results in higher yield of smears for cytologic interpretation

Thus USG guided FNAC is valuable tool in terms of higher degree of both accuracy and adequacy with low incidence of complication.

Considering these merits, USG guided FNAC should routinely be used in deep seated and nonpalpable abdominal masses. To avoid inadequate aspiration and to ensure proper needle placement ,FNAC should be performed by skilled cytopathologist..

6) REFERENCES :

1. Ashok S, Agrawal BS, Rana BS, Ultrasound guided FNAC in abdominal masses , Indian j of surgery 1986, 48, 386-389
2. Droese M, Altmannsberger, M,Kehl A, Lankish PG, Weiss R, WeberK, Ultrasound Guided percutanious FNAB of retroperitoneal masses. Accuracy of cytology in diagnosis of malignancy , Cytological tumor typing and use of antibodies to inter mediate filament in selected cases .Acta Cyto, 1984, 128, 363-384
3. Fyfe IS, Guided biopsy and drainage alimentary tract , Radiology 1983, 2, 2355-58
4. Reddy V, Guttuso P, Abrham K, Castelli M, CT Guided FNAB of deep seated lesions .Act cyto1991, 35 (6), 753-756
5. Whitlack S, Nunez C , Pitlik DA. FNAB of liver , A study of 102 consecutive cases , Act cyto1984, 28(6):719-25
6. Wilson Man-shan, TsuiFung-yip Cheng , Yat-wing Lee. Fine Needle aspiration cytology of liver tumor .Annuals of Contemporary Diagnostics pathology 1998:2:79-93
7. Zarger SA ,.Khuroo MS .Mahajan R, Shah P, Ultrasound guided FNAB of Gall bladder masses Int Radiolo 1991:179(1:275-78)
8. Harter LP, Moss AA, Goldberg HI, Gross BH,CT guided FNAC for diagnosis of benign and malignant disease. AJR, 1983, 140, 363-367
9. Tsodikova LB, Bankin VP, kinsky RL, Morphological diagnosis of abdominal cavity tumors using FNAB controlled by ultrasound .Arh Pathol , 1988, 50(3), 50-53
10. Reddy V, Gattuso P, Abraham K, Castelli M, CT Guided FNAB Of deep seated lesion, four year experience Acta cyto, 1991, 35(6), 753-75
11. Layfield L j , Heaps JM, Berek JS, FNAC accuracy with palpable gynecologic neoplasm. Gynaecol Onco, 1991:40(1):70-73
12. Pererias,Meiers W, Troner M, Hutson D, Barkan JS , and Vimamonte M. Fluroscopically guided thin needle aspiration biopsy of the abdomen and retroperitonium. AJR, 1978, 131:197-202
13. Swaroop SV, Gupta SK, Dilwari J, FNAC in diagnosis of abdominal lumps, Ind Journal med res, 1982,76,255-271
14. Ashok S. Agrawal BS , Rana BS, Jayram G Ultrasound guided FNAC in abdominal masses, Indian j of Surgery , 1986;48,386-389
15. Pilotti S , Rilke F ,Alastol, Garbagnati F The role of fine needle aspiration in assessment of renal masses Acta Cyto, 1988 ; 32(1) : 1 – 10
16. Reading C , Charboneau JW , James EM ,Hurt MR. Sonographically guided percutaneous biopsy of small (3 cm or less) masses AJR, 1988 ; 163 : 280-281.
17. Evans W K , Ho CS, Mclaughlin MJ ,Tao LC Fatal necrotizing pancreatitis following FNAB. Radiology, 1981 ; 141 : 61 – 62.
18. Ferrucci JT , Wittenberg J , Mueller PR ,Simeone JF , Harbin WP ,Kirkpatrick RH ,Taft PD. Diagnosis of abdominal malignancy by radiologic fine needle aspiration biopsy. AJR , 1980 ; 134 : 323 – 330
19. Riska H and Freeman C. Fatality after fine needle aspiration of liver BMJ Med J , 1975 ; 1 : 517.
20. Bissonette R , Berry B , Buckley A. Fatal carcinoma crisis after percutaneous FNAB of hepatic metastasis : a case report and literature review. Radiology, 1990 ; 174 : 751 – 752 .
21. Charboneau JW , Reading CC ,Welch TJ.CT and sonographically guided needle biopsy : current techniques &new innovations. AJR , 1990 ; 154 : 1 – 10.
22. Schwerk WB ,Schmitz – Moormann Ultrasoniclly guided fine needle biopsies in neoplastic liver disease : Cytohistologic diagnoses and echo pattern of lesions. Cancer 1981 ; 48(6) . 1469 – 1477
23. Bhobhate SK, Kumbalkat DT, Nayer SP, Bhelva A Guided FNAC of abdominal masses and spinal lesion . Journal of cytology 2001, 18(3):137-141
24. Shamshad SA, Kafil akhtar , Shakeel Akhtar , Alia nasir,Khalid M,Tariq , Ultrasound giuided Fine needle aspiration Biopsy of abdominal masses JK SCIENCE, vol 8, No4,oct-dec 2006, 200-206
25. Sidhaling reddy, Andola SK Fine needle aspiration cytology of intrabdominal lesions, Journal of clinical and Diagnostics Research , 2011, june Vol 5(3), 551-568
26. Tasleem AR, Farooq S, Niyaz I, Nazia B, Siddique A, khanday S, USG guided FNAC of intraabdominal and pelvic masses in Kashmir: A study at tertiary care hospital International journal of Medical Research & Health Sciences, 2016, 5, 4: 169-175