

Role of Ultrasound Guided Fine Needle Aspiration Cytology in Intra-abdominal lesion

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ABSTRACT

Introduction: All of the imaging techniques have advantages and disadvantage in various parts of the body. In intra-abdominal lesion ultrasonography guided FNAC has advantage over computerised tomography guided FNAC because CT is very costly and not freely available. CT gives high dose of radiation and therefore should not be used in pregnant women and in small children whereas ultrasonography has no radiation effects and hence can be safely used in these cases. Mobile version of CT is not available and therefore it cannot be used in faraway places whereas ultrasonography machine is mobile. Thus, with localization by ultrasonography diagnosis of the malignancy and staging can be accomplished through FNAC.

Method: Total of 100 cases who came for FNAC of intra-abdominal masses were included in the study, irrespective of their age, sex or possible nature of mass. Ultrasound guided Fine needle aspiration was done in all. The aim of the present study was to assess the feasibility of ultrasound guided Fine needle aspiration cytology of routine procedure for detection of abdominal lesion.

Result: Total of 100 cases were studied. In the 80(80%) cases, aspirates were positive for malignancy and in 17(17%) cases were negative for malignancy. There were 3% false negative cases encountered. There were no false positive cases. Ultrasound was used for mass localization. In 80 positive cases of malignancy, 36 cases from liver, 10 from lymph node, 7 from gall bladder, 6 from stomach, 6 from ovary, 3 from urinary bladder, 1 from pancreas, 1 from uterus, 3 from miscellaneous sites.

Conclusion: Percutaneous fine needle aspiration cytology is reliable method of diagnosing the various pathological lesions of abdomen. Its diagnostic accuracy is further increased when performed under Radiological guidance. Of all modalities of guidance at present is the most suitable.

Keywords: intra-abdominal mass, FNAC, USG guided

Introduction

Almost all organs are accessible to Fine needle aspiration cytology (FNAC) like lymph nodes, breast lump, enlarged thyroid, salivary gland lesion and abdominal lesion. Initially Fine needle aspiration cytology was done only on superficial

palpable masses but now with the advancement in diagnostic imaging procedures like ultrasound, computerised tomography and Magnetic resonance imaging, it is also possible to take samples from non-palpable small deep seated lesions in abdomen and thorax. There is definite advantage of Ultrasound guide FNAC over traditional FNAC in intra-abdominal lesion. The USG is capable of organ identification, obtaining detail images of organs, localizing lesion within them, demonstrating the relationship of surrounding structure (such as blood vessels, lymph nodes), demonstration of needle in the lesion and differentiation between solid and fluid filled cystic spaces. All of the imaging techniques have advantages and disadvantage in various parts of the body. In intra-abdominal lesion ultrasonography guided FNAC has advantage over computerised tomography guided FNAC because CT is very costly and not freely available. CT gives high dose of radiation and therefore should not be used in pregnant women and in small children whereas ultrasonography has no radiation effects and hence can be safely used in these cases. Mobile version of CT is not available and therefore it cannot be used in faraway places whereas ultrasonography machine is mobile. Thus, with localization by ultrasonography diagnosis of the malignancy and staging can be accomplished through FNAC. Various studies of fine needle aspiration of different types of abdominal lump under ultrasonography is available in literature- Proter B. et al(1981), Juul et al (1984). The aim of the present study was to assess the feasibility of ultrasound guided Fine needle aspiration cytology of routine procedure for detection of abdominal lesion.

Material and Methods

The present study was carried out in the Department of Pathology NSCB Medical College Jabalpur for a period of 2 years. Total of 100 cases who came for FNAC of intra-abdominal mass were included in the study, irrespective of their age, sex or possible nature of mass. Detail history and clinical examination of the patients was done. Routine investigations including bleeding time, clotting time and Prothrombin time were performed prior to ultrasound guided FNAC. An informed consent was taken after explaining procedure to the patient. Mass in question was imaged ultrasonographically to localize the origin and to decide whether or not to be aspirated. A

routine screening of the rest of the abdomen was also carried out simultaneously. Once a target lesion/ mass has been carefully localized and characteristic assessed, depth of the lesion from preliminary image is measured and according to this needle of desire length was selected. Cutaneous needle entry site was selected and most direct shortest safest route was selected avoiding major vasculature structure. Skin overlying the marked site was thoroughly cleaned with antiseptic solution and spirit. Local anaesthesia and sedation was not given in any cases. The patient was first explained about the procedure and instruction was given to patient to hold the breath in inspiration during needle insertion so that needle pass into right tract. Depth of lesion was noted and a 21-23 gauge needle was attached to 10 cc syringe. In case, if the depth was more 26 gauge Lumber Puncture Needle was used. Under the ultrasound guidance needle was gently pushed inside and

once the needle was found inside the lesion the needle was moved back and fro within the lesion and in different direction under constant suction in order to detach the tissue fragment. When the aspiration had been completed pressure in the syringe was allowed to equalise before the needle was withdrawn from the lesion and the puncture site was sealed with a tincture benzoin cotton swab. Now the material in the needle was expelled onto glass slide and smear was made by opposition technique. Smears prepared so were fixed in 95% alcohol for at least 30 min and stained with H&E staining.

Result & Discussion

The present study comprises of 100 cases presented with intra-abdominal lesion. This prospective study was conducted in department of Pathology and Radiodiagnosis, N.S.C.B Medical College, Jabalpur (M.P)

Table 1- Age distribution of cases

Age Group	Number of cases	Percentage
0-10	11	11%
11-20	2	2%
21-30	6	6%
31-40	15	15%
41-50	23	23%
51-60	29	29%
61-70	12	12%
71-80	2	2%
Total	100	100%

Youngest patient was 1 $\frac{1}{4}$ year old male child and oldest patient was 75 years old female. Maximum number of the patients were between 51-60 years of age (29%) and minimum number of the patients were between 11-20 years age (2%) and 71-80 years (2%). Sanjay Kumar Nigam et al (2014) in a study of intra-abdominal lumps by FNAC also observed maximum

number of cases in sixth decades followed by fifth and fourth decade. Dosi et al (2016)⁴ also observed maximum number of patients in the age group of 51-60 years. Sobha Rani G et al (2012)⁵ found maximum number of patient in 5th decade in a study of deep seated lesion by ultrasound guided aspiration cytology.

Table 2- Sex distribution of cases

S.No.	Sex	Total No of cases	Percentage
1	Male	54	54%
2	Female	46	46%
	Total	100	100%

In the present study 54 cases were males and 46 cases were female and male to female ratio was 1.17:1. The male predominance was also observed in studies by Govind Krishna et al (1993)⁶; Zawar MP7 et al (2007) and Sobha Rani G et

al(2012). However studies by Shamshad et al(2006)⁸; Sidhalingareddy et al(2011)⁹; Joao Nobrega et al(1994)¹⁰ and Sanjay Kumar Nigam et al(2014) showed a female predominance.

Table 3- distribution of lesion in different organ

Organ	Number	Male	Female	Percentage
Liver	42	28	14	42%
Para aortic lymph node	12	9	3	12%
Ovary	10	-	10	10%
Gallbladder	10	3	7	10%
Stomach	6	2	4	6%
Small and Large intestine	4	1	3	4%
Kidney	3	1	2	3%
Undescended testis	2	2	0	2%
Urinary bladder	2	2	0	2%
Uterus	1	0	1	1%
Pancreas	1	1	0	1%
Miscellaneous	7	5	2	7%
Total	100	54	46	100%

In the present study maximum number of aspirate were from Liver 42 cases(42%) and most of them were malignant. Out of 42 liver aspirate 28 were from male and 14 were from female. similar observation was made by other studies – Zawar MP et al (2007); Sidhalingareddy et al (2011);Sobha Rani G et al (2012); Droese et al (1984)¹¹ 34%, Porter etal ¹(1981) 23,8%, Jan and Mahajan et al (1989)¹² 45.5% also show higher occurrence of liver lesion.second organ with high incidence of involvement in the present study was paraaortic lymph node

12 cases (12%) followed by ovary(10%) and Gallbladder(10%). while in most other studies by Norbrega et al (1994); Adhikari RC et al(2010)¹³; G.I.T was the second common intra-abdominal organ involved.

In the present study population, no complications occurred during and after the procedure. The incidence of needle track seedling was 0.6% (one of 148 patients of HCC) in study done by Reddy et al.

Table 4. Distribution of cases according to FNAC findings

Organ	Inflammatory	Benign	Malignant	Inconclusive	Total
1. Liver	2	2	36	2	42
2. Lymph node	2		10		12
3. Ovary	-	4	6		10
4. Gallbladder	2	-	7	1	10
5. Stomach	-	-	6	-	6
6. Small & large gut	1	-	3	-	4
7. Kidney	-	-	3	-	3
8. Undescended testis	-	-	2	-	2
9. Urinary bladder	-	-	2	-	2
10. Uterus	-	-	1	-	1

11. Pancreas	-	-	1	-	1
12. Miscellaneous	4	-	3	-	7
Total	11	06	80	03	100

Table 5- Neoplastic and inflammatory masses

Abdominal masses	Number	Percentage
1. Neoplastic	85	85%
a) Benign	5	5%
b) Malignant	80	80%
2. Inflammatory	12	12%
3. Inconclusive	3	3%
Total	100	100%

Among the total 100 cases studied by the Fine needle aspiration cytology. Satisfactory smears could be obtained in 97 cases in our series. Out of 97 cases 80 cases were found to have malignant cells in aspiration cytology smear. In 17 % of cases aspiration cytology smear reveals benign or inflammatory nature of lesion. In 3 cases FNAC results were inconclusive. Similar observation with majority of intra-abdominal lesions as malignant was found in studies done on deep seated lesion (Sanjay Kumar Nigam et al (2014)³, Sidhalingreddy et al (2011), Aftab a Khan et al (1996), Adhakari et al (2010).

Conclusion

Percutaneous fine needle aspiration cytology is reliable method of diagnosing the various pathological lesions of abdomen. Its diagnostic accuracy is further increased when performed under Radiological guidance. Of all modalities of guidance at present is the most suitable.

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