

Ultrasound Guided Fine Needle Aspiration Cytology (FNAC) Study of Intra Abdominal Mass Lesions

Venu Ghodasara^{1*}, Hansa Goswami², Hemina Desai³, Safal Patel⁴

¹ 3rd Year Resident, ² Professor & Head, ³ Associate Professor, Dept. of Pathology, B.J. Medical College, Ahmedabad.

⁴ MBBS

ABSTRACT

Introduction: Fine Needle Aspiration Cytology (FNAC) is an interpretative art with histopathology as its scientific base. Ultrasound Guided Fine Needle Aspiration is safe, simple and efficient procedure to reach the door step of accurate diagnosis for intraabdominal mass lesions. **Materials and Methods:** A retrospective study was conducted at tertiary care teaching center, Ahmedabad. Cases were studied between January 2011 to August 2015. Total 100 cases were studied in which FNAC was done for intra abdominal mass lesion under ultrasound guidance. 95% alcohol fixed smears were prepared for Hematoxylin and Eosin (H & E) stain and PAP stain and air dried smears were prepared for May- Grunwald- Giemsa (MGG) stain. The lesions were divided into Inflammatory and Benign, Malignant, Suspicious for Malignancy and Unsatisfactory for interpretation categories. **Results:** Total 100 cases were studied in which FNAC was done for intraabdominal mass lesion under ultrasound guidance. There were total 37 inflammatory and benign cases against 56 malignant cases. 4 cases were unsatisfactory. So, they were excluded. 3 cases were under category of suspicious for malignancy. In present study predominantly male patients were affected. Majority of cases were present in the age group of 30 - 60 years. **Conclusion:** USG guided FNAC is a rapid, cost effective, accurate, non-invasive and a safe diagnostic procedure which can be conveniently used in various intra abdominal mass lesions.

Key words: Ultrasound, FNAC, Intra abdominal mass lesions

Introduction

Fine Needle Aspiration Cytology (FNAC) is an interpretative art with histopathology as its scientific base. Ultrasonography offers several advantages as it is readily available, relatively inexpensive and portable; it uses no ionizing radiation and it can provide guidance in multiple planes such as transverse, longitudinal and oblique¹. Ultrasound guided fine needle aspiration biopsy is a rapid, accurate, economical and safe diagnostic procedure in which any structure visualized, can be reached quickly and precisely by a fine needle in any desired plane with constant visualization of the needle tip during insertion². With increased sophistication of radiologic



*** Corresponding Author:**

Dr. Venu Ghodasara

Email: venughodasara@gmail.com

imaging techniques, the sensitivity of detecting non palpable deep seated lesion has improved.

Intra-abdominal masses always remain as an enigma in surgical practice. Imaging techniques do not always distinguish between benign and malignant lesion. A confirmed tissue diagnosis is essential for both treatment and staging of malignant lesion. As diagnosis is rapidly available on FNAC, appropriate medical or surgical therapy can be started earlier, at a same time avoiding unnecessary, expensive and often invasive diagnostic procedures and needless surgery³. In lesions requiring surgical removal, operative time is reduced, as frozen section biopsy may not be necessary. The aforesaid factors reduce or eliminate surgical morbidity and mortality as well as hospitalization, thereby benefiting the patient as well as the health care system⁴.

Thus, USG Guided Fine Needle Aspiration is safe, simple and efficient procedure to reach the door step of accurate diagnosis.

Aims and Objectives

1. To determine the incidence of different intra abdominal benign and malignant lesions.
2. To study the acceptability and diagnostic accuracy of cytology diagnosis in deep seated intra abdominal lesions.
3. To correlate the diagnosis of intra abdominal masses by FNAC with the results obtained by histological investigations.

Materials and Methods

A retrospective study was conducted at tertiary care teaching center, Ahmedabad. Cases were studied between January 2011 to August 2015. Total 100 cases were studied in which FNAC was done for intra abdominal mass lesion under ultrasound guidance. Aspiration was done in each case using a 22 -24 gauge needle attached to a 10 mL syringe for superficial masses and a 9-cm, 20-22 gauge spinal needle for deep-seated masses. 4 out of 100 aspirations were excluded as they were unsatisfactory as per our study criteria. 95% alcohol fixed smears were prepared for Hematoxylin and Eosin (H & E) stain and PAP stain and air dried smears were prepared for May- Grunwald- Giemsa (MGG).

Results

Total 100 cases were studied in which FNAC was done for intra abdominal mass lesion under ultrasound guidance. The cases were analyzed, based on the cytological features. The final diagnosis was arrived at in corroboration with the clinical and radiological features. The lesions were divided into Inflammatory and Benign, Malignant, Suspicious for Malignancy or Unsatisfactory for interpretation.

There were total 37 inflammatory and benign cases against 56 malignant cases. 3 cases were classified under suspicious for malignancy and 4 out of 100 aspirations were excluded as they were unsatisfactory as per our study criteria.

Table 1: Age Incidence for Inflammatory & Benign Lesions

Age (Years)	No. of Cases(%)
0-10 years	0
11-20 years	2 (5%)
21-30 years	7 (19%)
31-40 years	6 (17%)
41-50 years	9 (24%)
51-60 years	9 (24%)
61-70 years	4 (11%)
71-80 years	0

Table 2: Age Incidence for Malignant Lesions

Age (Years)	No. Of Cases(%)
0-10 years	1 (2%)
11-20 years	2 (4%)
21-30 years	2 (4%)
31-40 years	7 (12%)
41-50 years	16 (28%)
51-60 years	23 (41%)
61-70 years	4 (7%)
71-80 years	1 (2%)

Table 3: Sex Distribution

Sex	Benign	Malignant
Male	20 (54%)	37 (66%)
Female	17 (46 %)	19 (34%)

Table 4: Inflammatory and Benign Lesions

Category	No. of Cases(%)
Inflammatory	14 (38%)
Tuberculosis	10 (27%)
Reactive lymphadenitis	7 (19%)
Cystic Lesions	4 (11%)
Other	2 (5%)
Total	37

Table 5: Malignant Lesions

Category	No. of Cases(%)
Adenocarcinoma	13 (23%)
Lymphoma	12 (21%) Hodgkin's -4, Non Hodgkin's - 8
Metastatic Adenocarcinoma	11(20%)
Malignant round cell tumor (Other than Lymphoma)	7 (12%)
Undifferentiated carcinoma	6 (11%)
Renal cell carcinoma	3 (5%)
GIST (Gastrointestinal Stromal Tumor)	2 (4%)
Hepatocellular carcinoma	1 (2%)
Hepatoblastoma	1 (2%)
Total	56

Discussion

USG guided FNAC has facilitated easy collection of cellular material with great accuracy. The present study was conducted on 100 cases with intra abdominal mass discovered either on clinical or ultrasonographic examination.

The age incidence in present study ranged from 5 years to 73 years with majority of cases being in the age group of 30 - 60 years. Peak incidence of malignant lesions in this study was between ages of 41-60 years, which was comparable to the results obtained by Zawar MP. et al⁵ and Shamshad et al⁶.

Male to female ratio for benign lesions was 1.2:1 and for malignant lesions was 1.9:1, which was comparable to study results obtained by Zawar MP et al⁵, Govind Krishna et al⁷ and Aftab A. Khan et al⁸.

In present study, malignant lesions constituted the most common diagnostic category (56%), which was in accordance with the observations which were made by Biradar et al⁹, Aftab A. Khan et al⁹, and Shamshad et al⁶.

In present study, Adenocarcinoma was most common malignancy (23%). Pederson et al found 78.2 % cases of adenocarcinoma in their study⁵. In present study, out of 13 cases 6 were of intestinal origin, 2 from gall bladder origin, 1 was papillary adenocarcinoma and in 4 cases origin was not identified. Adenocarcinoma was followed by Lymphoma (21%) in which out of 12 cases, 4 were Hodgkin's lymphoma and 8 were non- Hodgkin's Lymphoma. Metastatic adenocarcinoma was found in (20%) of cases in which out of 11 cases, 4 cases were metastatic carcinoma in liver and, 2 cases were in umbilical region and 5 cases were in lymph nodes. Metastatic adenocarcinoma was followed by Malignant Round Cell Tumor- 7 cases (12%) and Undifferentiated Carcinoma- 6 cases (11%). In present study we found 3

cases (5%) of Renal Cell Carcinoma, 2 cases (4%) of Gastrointestinal Stromal Tumor, 1 case (2%) of Hepatocellular Carcinoma and 1 case (2%) of Hepatoblastoma.

Among Inflammatory and Benign lesions, Inflammatory (abscess) were most common having 14 cases (38%). Out of them 6 cases were in liver, 3 cases were in cecum, 2 cases were in right ileac fossa and 3 cases were other sites in abdomen. Inflammatory lesions were followed by tuberculosis having 10 cases (27%). Abdominal tuberculosis continues to pose a diagnostic challenge for the clinicians. In patients with abdominal tuberculosis whose presentations are insidious, an abdominal mass is cited the most common finding. It is in this group of patients that fine needle aspiration can be performed as an ambulatory procedure, to obtain a tissue diagnosis, thereby obviating a surgery. In the present study, 10 cases of intestinal tuberculosis, with AFB (Acid Fast Bacilli) positivity, were diagnosed on cytology alone. There were 7 cases (19%) of reactive lymphadenitis and 4 cases (11%) of cystic lesion in which, 2 were of mesenteric / mesothelial cyst, 1 was pseudocyst or true pancreatic cyst and 1 was dermoid cyst in epigastrium. In 2 other cases 1 was of solid pseudopapillary tumor of pancreas and 1 was desmoid tumor.

Histopathological follow up was available for 74 cases and no discrepancy was found between diagnoses obtained by cytology and histopathology.

Conclusion

USG guided FNAC is a rapid, cost effective, accurate, non-invasive and a safe diagnostic procedure which can be conveniently used in various intraabdominal mass lesions, thereby avoiding unnecessary, expensive and often invasive diagnostic procedures. It can be done on an outpatient basis. It can preempt a lengthy and an expensive workup in the search for a primary tumor. It has emerged as a reliable method which involves minimal/ no risks and complications. USG guided FNAC, as the first line investigation, is not only useful in the diagnosis of deep seated, inaccessible and space occupying intra abdominal masses, but it also helps in choosing the appropriate management.

References

1. Sheikh M. Sawhney S, Dev P, al-saeed O, Behbehni A. Deep seated thoracic & abdominal masses: usefulness of USG guidance in FNAC diagnosis. *Australas Radial* 2000; 44:155-60
2. Orell SR, Sterrett GF, Walters MN, Whitakar D. *Manual and atlas of fine needle aspiration cytology*. 4th ed; 2005. pp 31-38.
3. Ballo MS, Guy CD. Percutaneous fine needle aspiration of gastrointestinal wall lesions with image guidance. *DiagnCytopathol*2001; 24: 16-20.
4. *International Journal of Recent Trends in Science and Technology* (ISSN: 2277-2812 E-ISSN 2249-8109) Volume 17, Issue 2 December 2015.
5. Dr. Zawar M.P., Dr. Bolde S., Dr. Shete S.S. Correlative study of fine needle aspiration cytology and histology in intraabdominal lumps. *SMJ* 2007;4.

6. S. Shamshad Ahmed, Kafil Akhtar, S. Shakeel Akhtar et al. Ultrasound guided fine needle aspiration biopsy of abdominal masses. JK Science. 2006; 8(4):200-204.
7. Govind Krishna SR., Ananthakrishanan N., Narasimhan R., Veliath AJ. Accuracy of Fine Needle Aspiration Cytology of Abdominal Masses without Radiological Guidance. Indian J. Pathol. Microbiol. 1993;36(4): 442-52.
8. Aftab Khan A., Jan GM., Wani NA. Fine Needle Aspiration of Intraabdominal masses for cytodiagnosis. J. Indian Med Assoc 1996; 94(5):167-69.
9. VB. Biradar et al. A study of fine needle aspiration cytology in abdominal lump (dissertation). Gulbarga: University of Gulbarga, 1994.