



## A study of guided FNAC of thoracic and abdominal lesions.

**Dr Pallavi A Chaudhari**

MD Pathology, Pathology Department, P.D.U. Medical College, Rajkot.

**Dr Shilpa H Gandhi**

Associate Professor, MD Pathology, Pathology Department, P.D.U. Medical College, Rajkot.

**Dr Gauravi Dhruva**

Professor, MD Pathology, Pathology Department, P.D.U. Medical College, Rajkot.

### ABSTRACT

#### BACKGROUND AND OBJECTIVES:

*The present study is undertaken with following aims and objectives:*

- *Diagnosis of any deep seated lesions.*
- *To detect metastasis and its documentation.*
- *Staging of malignancy.*
- *Enhance visualization and sampling of the lesions that are not easily localized by older methods.*
- *To assist clinician in selection of patients for surgery or palliative therapy.*
- *As a routine pre-operative diagnostic procedure.*
- *To access diagnostic accuracy of the procedure.*
- *To correlate with other studies.*

**METHODS:** *The present study is of 142 cases including various organs like lung, liver, kidney, colon, identified on abdominal and thoracic lesions ultrasonography underwent ultrasonographically-guided FNAC using a 21-G needle. The sample was checked immediately by a cytopathologist for adequacy.*

**RESULTS:** *A total of 142 cases of guided FNACs of lesions of various body organs have been included in this study, aspirated by Department of Pathology and Radiology, between October 2011 to August-2013, P.D.U. Medical College, Rajkot and Hospitals, Rajkot. From the 142 FNACs, 125 were USG guided and 17 were CT guided. Out of 142 aspirations, 11 aspirations were inadequate. So the overall success rate of aspirating diagnostic material was 92.4%.*

**CONCLUSION:** *FNA is an effective and useful tool in diagnosis of pulmonary and abdominal lesions for trained internists. Success of procedure and adequacy of specimen for cytological evaluation are considerably high and low complications occurred. With the help of USG or CT guidance, it is easy to perform the FNAC, where the lesion is too small (< 1 cm) and non palpable.*

### KEYWORDS : Guided FNAC of thoracic and abdominal lesions.

#### INTRODUCTION

Fine Needle aspiration cytology (FNAC) as practiced today is an interpretative art with histopathology as its scientific base. Its practice is quite different from that of either exfoliative cytology or surgical pathology. Unlike histopathology where in tissue pattern, cell morphology, intracellular products and intercellular matrix are preserved, in cytology- mainly the cell morphology is preserved.

FNAC is simple, rapid, and cost effective and requires little additional resources or equipments to any standard histopathology laboratory and carries insignificant morbidity .

Accuracy of diagnosis of guided FNA depends on the precision of the instruments used to obtain the specimen, the skill of the radiologist and the diagnostic acumen and experience of cytopathologist . With the use of CT scan and ultrasonography by experienced persons, virtually every lesion has become accessible to aspiration. The needle can be visualized within the lesion so that there are few sampling errors and false negative results are minimized.

Modern imaging techniques, mainly ultrasonography (USG) and computed tomography (CT), applied to organs and lesions in sites not easily accessible to surgical biopsy offer vast opportunities for percutaneous, transthoracic and transperitoneal fine needle biopsy of deeper structures.

More recently, techniques have been developed to perform USG-directed FNB through an endoscope, mainly of lesions in the pancreas or adjacent tissues.

Ultrasonography offers a two dimensional anatomic display, when compared with CT, ultrasound has the advantage of greater scanning flexibility and speed, in addition to the absence of radiation exposure and the relative low cost.

During USG guided FNAC, pathologist should be present who can guide to different areas of the lesion as periphery instead of central necrotic area of lesion like tumour is more important. Thus close knit set-up with constant interaction and co-operation among clinicians, imaging and cytopathology department ensures the most accurate diagnostic yield. At a time it is not possible to give specific diagnosis but cytological pattern will suggest some clue and help in further planning of investigation and treatment for the benefit of the patients.

FNAC is used predominantly for diagnosing mass lesions where there is a question of neoplastic process, either primary or metastatic. Occasionally non-neoplastic lesions of diffuse liver disease mimic mass like lesions or appear as non-homogenous regions on radiograph, such lesions are sampled by FNA to rule out neoplasm for the differential diagnosis.

#### MATERIAL AND METHODS:

The present study comprises of 142 cases of various body organs in whom fine needle aspiration cytology was carried out at the Pathology department, P.D.U. Medical college-Rajkot and Radiology Department, P.D.U. Hospital- Rajkot during the period from October 2011 to August-2013.

The procedure was carried out in USG section of radiology department. The skin puncture site proposed by radiologist was cleaned to remove coupling media (jelly) and local sterilization with betadine and spirit was done. Patient was asked to hold breath and 22G lumbar puncture needle with stellate was introduced in the direction proposed by the radiologist.

After reaching the exact site, tip of the needle was checked by side to side movement under USG or CT guidance, then the stellate was removed, keeping the needle in position without any displacement. A 10 to 12 cc syringe was attached and aspiration was carried out. To and fro movement of needle gives better aspiration. After getting aspirated material in the syringe, needle was withdrawn and smears were made from the aspirate. Whenever cystic fluid aspirated, it was centrifuged and from sediment smears were prepared. Syringe was detached and filled with air. Again the syringe was attached and air was pushed through needle to expel the aspirate out from needle.

Smears prepared from the aspirate were fixed with cytofix (50 % ethyl alcohol + 50% diethyl ether) and stained with hematoxylin and eosin. Whenever required Periodic Acid Schief Stain and Giemsa Stain were also used.

### RESULTS:

The following observations were seen in the present study.

**Table-1**  
**Age distribution of patients (142 cases)**

Age (Years)	No. Of Cases	Percentages (%)
0-10	0	0
11-20	0	0
21-30	6	4.3
31-40	12	8.5
41-50	29	20.5
51-60	51	35.10
61-70	32	22.6
71-80	10	7.6
81-90	2	1.4

Wide range of age has been observed, youngest patient being 22 years of age and oldest 90 years of age. Mean age was 50 years. Highest no. of patients were noted in 5<sup>th</sup> decade, followed by 4<sup>th</sup> decade of life.

**Table-2**  
**Organ wise distribution (142 cases)**

Organ	No. of patients	Percentage (%)
Lung	107	75.4
Liver	13	9.2
Kidney	08	5.5
Retroperitoneal area	05	3.5
Bowel	08	5.0
Stomach	02	1.4

Maximum cases were noted in lung (107 cases) followed by liver(13), kidney(8), bowel(7), retroperitoneal area and least were from stomach(2)

**TABLE-5**  
**Relation between age and malignancy**

Age	Benign	Benign (%)	Malignant	Malignant (%)
0-10	0	0	0	0
11-20	0	0	0	0
21-30	0	0	02	40
31-40	0	0	06	50
41-50	1	23.3	24	72.7
51-60	0	0	43	89.6
61-70	0	0	27	87.1
71-80	0	0	08	88.9
81-90	0	0	02	100

Table indicates that with increase in age, incidence of malignancy rises. Also in very early age groups malignant lesions are observed.

### DISCUSSION:

FNAC is a method where a, fluid and/or cells are aspirated from a lesion for cytological examination. Although needle aspiration cytology had been performed intermittently in the second half of the last century, it was popularized by Martin, Ellis and Stewart at Memorial Hospital for Cancer and Allied Diseases, New York in the 1930. The initial targets were palpable masses, particularly enlarged lymph nodes and breast lumps but now FNAC of intraabdominal and intrathoracic masses has become increasingly common. Any intraabdominal, retroperitoneal or intrathoracic masse can be aspirated with USG or CT guidance and guided FNAC is now widely accepted as a safe diagnostic procedure in various neoplastic and non-neoplastic lesions. However Khanna et al performed FNAC from intraabdominal and intrathoracic masses without guidance in case of palpable masses. Some workers also performed FNAC with the help of fluoroscopic guidance. Sensitivity and specificity is found to be increased when FNAC is taken with the help of radiological guidance and its advantage is well established.

Various studies reviewed showed that some authors studied FNAC in lesions of all abdominal or thoracic organs, while some limited to particular specific organ.

The present study is of 142 cases including various organs. Out of the 142 cases, 125 were USG guided and 17 were CT guided. Out of which 130 aspirates yielded adequate material to reach up to the diagnosis while 12 aspirates were inconclusive. So overall the success rate of the study was 91.53%.

## REFERENCES

1. Linsk J.A.; Franzens. Clinical Aspiration Cytology. 2nd Edition, J.B. Lippincott Co. Page 85-104. | 2. Koline Ts. Hand book of fine needle aspiration biopsy, Cytology, 2nd Edition ; Edinburgh, Churchill Livingstone, 1988. | 3. Svante R. Orell, Gregory F. Sterrett, Max N-1. Walters, Darrel Whitaker; Manual and Atlas of fine needle aspiration cytology, 4th Edition, Churchill Livingstone Pub; 2005. | 4. Winifred Gray, Grace T Mckee. Diagnostic Cytopathology, 2nd Edition; Churchill Livingstone Publication; Page-367. | 5. Silverman JF, geisinger KR. Fine needle aspiration cytology of the thorax and abdomen. Edinburgh: Churchill Livingstone; 1996. | 6. Silverman JF, geisinger KR. Fine needle aspiration cytology of the thorax and abdomen. Edinburgh: Churchill Livingstone; 1996. | 7. Ballo MS, Guy CD. Percutaneous fine-needle aspiration of gastrointestinal wall lesions with image guidance. Diagn Cytopathology 2001;24:16-20. | 8. Leopold G. Koss Diagnostic Cytology, 4th Edition. Philadelphia J.B. Lippincott page 687-864, 1236,773, 1991. |