

**Original article:**

**Diagnostic diversities of Clear Fluid encountered during Fine needle aspiration cytology with an analysis of various variables.**

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**Abstract:**

**Background:** Incidental finding of clear fluid during fine needle aspiration (FNA) is not rare in day to day practice of cytology. Though clear in appearance, cells obtained from it may yield a diverse diagnosis ranging from an inconclusive opinion to a malignant lesion. So, clear fluid is not non-significant always; lack of proper processing and examination may prove fatal to a patient. **Aim:** To evaluate the diverse diagnosis of clear fluid. **Materials and methods:** During a period of three years, hundred and seven cases which yielded clear fluid during FNAC from different parts of the body were studied. Direct and indirect smears (wherever applicable) was prepared, stained and examined microscopically. **Results:** Of these 107 cases of clear fluid, Male: Female ratio was 1: 1.6. Maximum cases - 55 (51.40%) was found in the age group 21 to 40 years. Trunk held the most number of lesions - 54 cases (50.46%). FNA results were interpreted as inconclusive in 19 cases (17.76%), benign in 84 cases (78.50%), suspicious in 01 case (0.93%) and malignant in 03 cases (2.80%). Epidermal cyst was the most common benign lesion - 16 cases (14.95%). Malignant lesions found were papillary carcinoma of thyroid, carcinoma of breast and metastatic squamous cell carcinoma – one case each. **Conclusion:** Our study emphasizes on the importance of proper examination of clear fluid as it may prove helpful in an undiagnosed case of malignancy and it may also improvise the learning of young pathologists.

**Keywords:** Clear fluid; fine needle aspiration; diagnostic diversities.

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**Introduction**

Fine needle aspiration cytology (FNA) is a fast and easy method of diagnosing any accessible lesion<sup>1,2</sup>. This simple procedure can provide a clue to a clinician to prepare a strategy for further management which may save time and cost of therapy. The variety of appearance, with which the aspirates present during FNA, has often been helpful in providing a clue to a diagnosis. The present study was aimed at evaluation of the diagnostic diversities that were encountered, when FNA yielded only clear fluid. Clear fluid may not contain any cell at all; on the other hand it may harbor malignant cells.

**Materials and methods**

The study was conducted in the Department of Pathology of our institute from January 2014 to December 2016. A total of 10,434 FNAs were performed during this period, of which 107 FNAs from different parts of the body yielded clear fluid. FNA of all these patients were performed without local anesthesia using 23 gauge needle. Quincke's 25 G x 3.5" needle was used for intra-abdominal lesions. 20 ml disposable syringe attached to FNA gun was used for suction. Help of ultrasonography was taken in selected cases. Coagulation screening was not routinely performed unless there was a previous

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risk of bleeding. The procedure was generally well tolerated without any complication. Direct smears were made from the aspirated material. In case of voluminous aspirates, indirect smears were also prepared in addition to the direct smears. Smears were stained with Leishman-Geimsa and Papanicolaou stains and examined under light microscope. The cytological diagnoses rendered were categorized into four groups – Inconclusive, Benign, Suspicious and Malignant. In addition to diagnoses the case details of these 107 patients were recorded which include information about the age, sex and site of FNA.

**Ethical clearance:** This study was performed after being approved by Health/Medical Research Bioethic Commission, Bankura Sammilani Medical College, Bankura

**Result**

Of these 107 cases of clear fluid, Male: Female ratio was 41 vs 66 (1: 1.6). Patient age ranged from 5 years to 73 years. Maximum cases- 55 (51.40%) were found in the age group of 21 to 40 years and minimum cases - 08 (7.47%) was seen in age group of >60 years. Trunk held the most number of lesions - 54 cases (50.46%) and inferior extremity had the minimum - 10 cases (9.34%). FNA results were interpreted as inconclusive in 19 cases (17.76%), benign in 84 cases (78.50%), suspicious in 01 case (0.93%) and malignant in 03 cases (2.80%). Among the benign cases, epidermal cyst tops the list with 16 cases (14.95%). Other benign lesions found were lipoma, neurofibroma, filariasis, colloid goiter with cystic change, synovial cyst, cystic hygroma etc. Benign lesions encountered, have been listed in table no. 3 according to their decreasing order of frequency. Papillary carcinoma of thyroid, carcinoma of breast and metastatic squamous cell carcinoma were different malignant lesions which yielded clear fluid on aspiration in our study.

**Table 1: Distribution of patients by age and sex.**

Sex	No. of cases	0-20	21-40	41-60	>60
Male	41 (38.31%)	07 (6.54%)	23 (21.49%)	08 (7.47%)	03 (2.80%)
Female	66 (61.68%)	20 (18.69%)	32 (29.90%)	09 (8.41%)	05 (4.67%)
Total	107	27 (25.23%)	55 (51.40%)	17 (15.88%)	08 (7.47%)

**Table 2: Distribution of patients by anatomical site and type of lesion.**

Site	No. of cases	Inconclusive	Benign	Suspicious	Malignant
Head & neck	31 (28.97%)	04 (3.73%)	26 (24.29%)	00	01 (0.93%)
Trunk	54 (50.46%)	10 (9.34%)	42 (39.25%)	01 (0.93%)	01 (0.93%)
Superior extremity	12 (11.21%)	03 (2.80%)	08 (7.47%)	00	01 (0.93%)
Inferior extremity	10 (9.34%)	02 (1.86%)	08 (7.47%)	00	00
<b>Total</b>		<b>19</b> (17.75%)	<b>84</b> (78.50%)	<b>01</b> (0.93%)	<b>03</b> (2.80%)

**Table 3: Distribution of benign, suspicious and malignant cases on cytology**

(a)	Benign cases, lesions n = 84	Frequency	Percentage
Epidermal cyst		16	14.95
Benign cystic lesion		14	13.08
Inflammatory lesion		13	12.14
Fibroadenoma		10	9.34
Lipoma		07	6.54
Fibrocystic change		06	5.60
Tuberculosis		03	2.80
Reactive hyperplasia of lymph node		03	2.80
Adnexal/ Benign fibrohistiocytic lesion		03	2.80
Neurofibroma		02	1.86
Colloid Goiter with cystic change		02	1.86
Gynecomastia		02	1.86
Filariasis		01	0.93
Synovial cyst		01	0.93
Cystic hygroma		01	0.93
(b)	Suspicious case, lesions n = 01	01	0.93
(c)	Malignant cases, lesions n = 03		
Papillary carcinoma of thyroid		01	0.93
Carcinoma of breast		01	0.93
Metastatic Squamous cell carcinoma		01	0.93

**Discussion**

FNA of the superficial and deep lesions have radically changed the management of patients presenting to the clinicians. Clear fluid yield during FNA is not an uncommon occurrence. Though it resembles clear but it may be a puzzle masking a deleterious

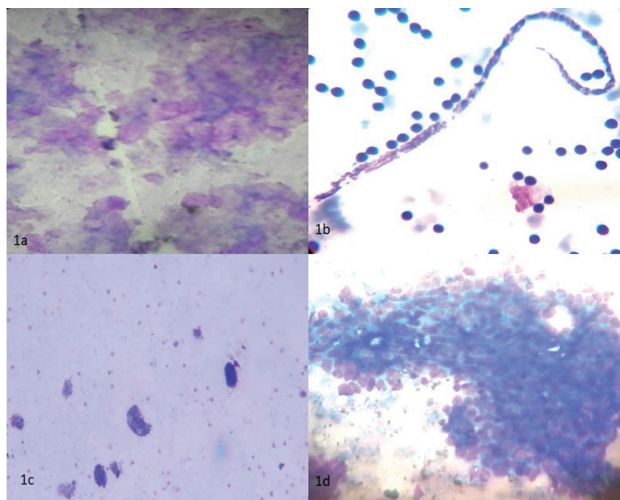


Figure 1: Epidermal cyst (1a), Filariasis (1b), Colloid goiter with cystic change (1c), Gynaecomastia (1d)

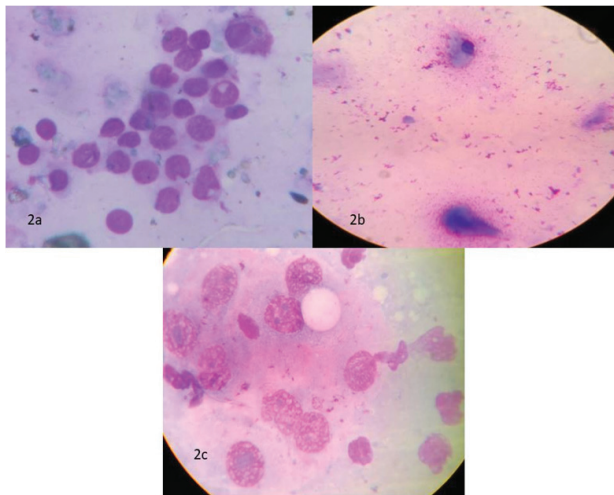


Figure 2: Papillary carcinoma of thyroid (2a), Metastatic Squamous cell carcinoma (2b), Carcinoma of breast (2c)

disease<sup>3-6</sup>. The present study was an attempt to show the diagnostic diversities of clear fluid encountered during FNA. The diagnosis of Filariasis came to us as a surprise and this correlated with other researchers. A study by Khare P et al considered filariasis as one of the differential diagnosis of a superficial swelling particularly if clear fluid was obtained on FNA<sup>3</sup>. Even more surprising was when a small swelling in the left lateral side of the neck, in a male patient of 22 years, yielded clear fluid and subsequently was diagnosed as papillary carcinoma of thyroid.

**Conclusion**

Different types of aspirates (blood mixed, cheesy, pus, fatty, clear fluid, colloid etc.) encountered during FNAC often give us a clue to a diagnosis. Clear fluid aspirates are not an uncommon find in our day to day practice. The diagnostic diversity with which clear fluid presents, gives us an idea that not all feline of the species is a cat; underlying may be a Tiger, a Leopard, a Panther or a ferocious Lion. A diligent search and a respect for the un-harmful looking aspirate is all what is needed.

**Conflict of interest:** None

**Authors' contribution:**

Data gathering and idea owner of this study: Minz R.S, Adhikari A, Biswas S, Ray R N, Bose K  
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