

1 Should FNAC be Restricted to an Elite Estigation-an Experience
 2 of 20,237 Aspirations Including More than 8000 Aspirations from
 3 Head and Neck Region

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8 **Abstract**

9 Objectives: Cytological evaluations of a vast number of cases were presented in this study.
 10 More than 2/5th of the cases were reported from head and neck region. Our objectives were to
 11 prove the diagnostic value of FNAC and to judge its feasibility in peripheral health
 12 institutes. Method: this study was done in pathology department of Me -dical College
 13 Hospital, Kolkata for a period of 10 years. Aspirates were classified into one of the three
 14 interpretation groups (easy, moderately difficult, and highly difficult) according to set up
 15 criteria. Cytohistological correlations were done in all possible cases. Results: out of total
 16 20,237 cases undergoing cytological evaluation during study period, 1774 cases (8.77

18 *Index terms*— fnac, interpretative categorization, large series.

19 **1 I. Introduction**

20 eedle aspiration cytology was successfully utilized by Greig and Gutheri as early as 1904 for diagnosis of sleeping
 21 sickness from cervical lymphnode aspirates 1 .but for the next 50 years this method of diagnosis was largely
 22 ignored due to complications like tissue injury and needle track dessimination 2 . Later on Cardoza (1954),
 23 Franzen, Geirtz and Zajicek (1960) etc workers introduced the technique of Author ? ? ? ? ¥ §: Medical college,
 24 Kolkata. e-mail: misra_malabika@rediffmail.com FNAC with lesser complications and reasonable success rate
 25 3,4 .

26 Last 4 decades experienced spectacular developments in the field of aspiration cytology and now it has emerged
 27 as diagnostic method of preoperative assess -ment any type of swelling. Use of thinner needle has reduced tissue
 28 injury to a minimum enabling aspiration from vascular hamartomas or large thyroid lesions 5 . Reported incidence
 29 of needle track dissemination after FNAC was also negligible 2 . Even testicular malignancies can now be aspirated
 30 safely 6 .

31 FNAC is also a reasonably accurate method of diagnosis. Different workers reported more than 75% accuracy
 32 in predicting a definite diagnosis on cytological evaluation 5,7,8,9,10 . This is quite comparable with success rate
 33 of modern radiological or serological investigations. FNAC can also be used in tandem with modern radiological
 34 procedures like USG, mammography, CT scans with improved diagnostic accuracy in comparison to outcome of
 35 any single procedure employed 9 .

36 Principal limiting factor of accurate cytodagnosis is adequacy of aspirate 11 . In spite of repeated aspirations
 37 every worker has reported variable percentage of failed aspirations in their series 5,9,10 . Radiological guidance
 38 often helps in obtaining enhanced amount of aspirates at the cost of increased expenditure 12 . Another major
 39 handicap of FNAC is diagnosis of a large lesion with heterogeneous tissue composition. In those cases variability
 40 of aspirates from different sites causes considerable confusion 11, ??? . Guiding methods can be helpful in
 41 choosing appropriate site / sites for aspiration in these cases 9,12, ??? .

42 In spite of those two serious drawbacks, FNAC became an important wing of diagnostic medicine because it
 43 delivers report with minimum expenditure of money and time in comparison to any other method with comparable

44 safety and accuracy 12 . In our series, a large number of aspirate from all parts of body were evaluated to establish
45 the reliability of this method of diagnosis. Aspirates from head and neck region accounted for almost half of the
46 cases. Our main objectives were: ? To show that interpretation of aspiration in majority of the cases are simple
47 and straight forward. ? To establish that FNAC is a cheap procedure capable of predicting final tissue diagnosis
48 with reasonable accuracy and should be encouraged to be done at grass root level.

49 2 II. Material and Methods

50 This method was conducted in the Pathology department of Medical College Hospital, Kolkata for a period of 10
51 years (1 st January, 2000 to 31 st December 2010). All cases coming to pathology department for FNAC during
52 the mentioned period were included in our study group. FNAC was done using standard procedures and aspirates
53 were stained with May-Grunwald -Giemsa (MGG) stain, Haematoxylin and Eosin (E & O) stain, Papanicolaou
54 stain 12 . Stained slides of each case were evaluated by two separate observers simultan -eously to be categorized
55 into one of the three groups mentioned below:

56 ? Interpretation easy:Two observers reached same definitive diagnosis on initial assessment separately without
57 consultation of any reference material. Lymph nodes were the single most common target of aspiration (28.71%),
58 followed by breast; thyroid, skin etc. intra-abdominal, intra-thoracic sites are the least common. Breast aspirates
59 are easier to interpret (94.64%) but salivary gland aspirates are least easy to interpret (77.8%). Intra-abdominal
60 cases are the most difficult (8.70%) to interpret. IV.

61 3 III. Observation

62 4 Discussion

63 In the present study, 1774 cases (8.77%) were aspirated under various radiological guidance (CT scan, USG,
64 fluoroscopy). These cases were not included in final analysis because of higher expenditure and poor availability
65 of the guiding techniques at peripheral levels. Among the cases aspirated without guidance (18463), 3.16% (584
66 cases) could not be reported due to inadequate aspirate. Reported incidence of inadequate aspirate in various
67 studies ranges from 32.2% to 2.5% 7,8,14 . Comparatively lower incidence in our series could be attributable to
68 repeated aspiration attempts by multiple persons in more than one sitting.

69 More than 90% cases (16098 out of 17879) of present group were categorized into easy to interpret, 6.72% cases
70 were moderately difficult and 3.25% were highly difficult demanding highest level of collective expertise -only
71 available at referral centers. Different workers reported incidence of misdiagnosis during cytological evaluation
72 of large number of cases in their series ranging from 0% to as high as 33% 10,9,15,16 .

73 Head and neck lesion accumulated for majority of the cases (47.3%) in our series. Lymph nodes were the
74 commonest target (37.8%) among head and neck aspirates. Similar data was also published by other researchers
75 10,12 .

76 In our study breast aspirates were comparatively easy with less than 2% cases belonging to highly difficult.
77 Similar results were shared by other workers 8,9 . We faced maximum difficulty during distinction between
78 proliferative breast disease with variable dysplasia and breast carcinoma in situ as also by other researchers 17
79 . In cases of salivary glands only 77.8% were easy to interpret. Different workers admitted various pitfalls and
80 problems during salivary gland aspiration study 18,19 . 8.7% of abdominal aspirates were highly difficult to
81 interpret.

82 In this study we achieved almost 85% Cytohistological correction. Reported incidences of false positive and
83 false negative malignant cases were 14.93% and 10.48% respectively. Sensitivity, specificity, positive and negative
84 predictive value for detection of malignancy was between 85.07% to 89.52%. These data's quite clearly establish
85 the diagnostic value of aspiration cytology. Comparable results were published by a lot of cytopathologists dealing
86 with large number of cases 7,8,10,16 .

87 5 V. Conclusion

88 from the above discussion it is quite clear that FNAC is a reliable method of pathological diagnosis, for lesion of
89 all parts of body including head and neck region.

90 But we want to interpret our results from another angle. During the last 4 decades diagnostic medicine has
91 undergone a sea of changes. Unfortunately all the diagnostic approaches of recent discovery are much costly. But
92 apart from human resources one has to spend less than RS 1000 for FNAC. Butwith routine stains cost is less
93 than Rs 20. FNAC can quickly diagnose malignancy around 90% of cases. In developing countries FNAC is a
94 very useful tool for tissue diagnosis.

95 Cytopathology should not be treated as a highly sophisticated diagnostic procedure but a cheap and efficient
96 measure that can be used routinely by trained persons. Hope this change of approach should come soon from
97 our community to bloom the fullest potentiality of this unique diagnostic tool.



Figure 1: N

5 V. CONCLUSION

1

Total cases	No. of cases needed	%	No ofcases without guidance	%
20237(100%)	1774	8.77	18463	91.23

Out of 20237 cases 1774 (8.77%) needed guided aspiration.

Table 2 : adequacy of aspiration

No of cases aspirated without guidance	No. of inadequate aspirates	%	No. of adequate aspirate	%
18463(100%)	584	3.16	17879	96.84

Despite repeated aspiration 584 (3.16%) cases was failed.

Table 3 : Categorization of aspirates

No. of adequate aspirate	Interpretative categorization			
	Interpretation easy		Interpretation moderately difficult	highly difficult
17879 (100%)	No 16098	% 90.03	No 1203	% 6.72

Moderately difficult interpretation was in 6.72 %(1203) and highly difficult in 3.25%(578).

Table 4 : region wise distribution of cases

No. of cases adequately aspiration	Regions aspirated				
	Head and neck	Thorax	Superior extremity	Inferior extremity	Abdomen region
17879(100%)	8466 (47.30%)	4119 (23.10%)	2693 (15.10%)	1911 (10.70%)	207 (1.10%) 483(2.70%)

Maximum no of cases (8466 / 17879) 47.30% were done from head and neck region followed by thorax (23.1%) & superior extremity (15.1%). Out of the 8466 head and neck aspirates lymph node biopsy are the most common (37.8%). Closely followed by thyroid (34.5%).

Figure 2: Table 1 :

5

Total no. of aspirates from head and neck region	Organ wise distribution						
	Lymph node	Thyroid	Salivary gland	Nasal, naso & oropharyngeal	Skin and soft tissue and oral	Orbital	Multiple sites
8466 (100%)	3205 (37.8%)	2923 (34.5%)	978 (11.5%)	439 (5.2%)	386 (4.5 %)	276 (3.3%)	259 (3.2%)

Figure 3: Table 5 :

6

: organ wise distribution of all cases with interpretation categorization

No of adequate aspirates	Sites of aspiration	No of cases	%	Interpretation categorization					
				Easy		Moderately difficult		Highly difficult	
				No	%	No	%	No	%
17879	Lymph node	5134	28.71	4433	86.3	402	7.8	299	5.9
(100%)	Breast	3961	22.15	3749	94.64	143	3.61	69	1.75
					(max)		(min)		(min)
	Thyroid	2923	16.35	2648	90.6	216	7.38	59	2.02
	Skin and soft tissue	1957	10.94	1836	93.82	85	4.34	36	1.84
	Bone and joints	1186	6.63	1076	90.72	71	5.99	39	3.29
	Salivary glands	978	5.47	761	77.8	189	19.32	28	2.88
					(min)		(max)		
	Nasal & naso/oropharyngeal	439	2.45	396	90.2	34	7.74	9	2.06
	Orbital	276	1.54	257	93.11	13	4.71	6	2.18
	Intra-abdominal	138	0.77	117	84.78	9	6.52	12	8.70
									(max)
	Intra-thoracic	65	0.36	54	83.07	6	9.23	5	7.70
	Multiple sites	822	4.59	771	93.79	35	4.26	16	1.95

Figure 4: Table 6

7

No. of cases with histology	cytodiagnosis	No of cases		Histological diagnosis			Cases with correction	Cases with disparity	
		Non-neoplastic	906	neoplastic	Non-Benign	Malignant		No	%
5807				752	109	45	4923		
							84.78		
							884		
							15.22		
(100%)		Benign	2282	50	1943	289			
		Malignant	2619	38	353	2228			

Table 8 : detection of malignancy

No of cases with histology	cytodiagnosis	No	Histologic diagnosis	False positive malignant cases		False negative malignant cases		sensitivity value	specificity predicti
				No	%	No	%		
5807	Nonmalignant	3188	285	334	39	14.93	334	10.48	85.07
(100)	Malignant	2619	391	2228	1				59.52

Figure 5: Table 7 :

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