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Utility of Cytology in Surgical Camps done in a Rural Hospital in Maharashtra, India

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Abstract

Introduction: Cytology is being used commonly for pre and intra operative diagnosis to know the nature of the lesion and extent of surgical margins. It is very useful in surgical camps held in rural areas serving the tribal's, where the patients are inadvertently lost to follow up, and hence it becomes difficult for operating surgeons to plan the course of action especially in cases of borderline or frankly malignant lesions

Aim: This study was undertaken to evaluate the usefulness of cytology in diagnosing lesions in a surgical camp held in a rural hospital**.**

Material and Methods: The study was conducted on material obtained from a rural hospital in Maharashtra and included 40 tribal patients posted for surgery. Detailed clinical history and significant findings were noted. FNAC (Fine needle aspiration cytology) was performed a day before the surgery. FNAC smears were fixed in absolute alcohol & stained with rapid PAP and rapid Hematoxylin and Eosin stain. Cytological diagnosis on FNA aspirate smears was given in all cases. Scrape cytology was done on operated specimens immediately after surgery. A histopathological examination and correlation with cytology was done later.

Results: The present study included 40 cases. The diagnostic accuracy of the FNAC was found to be 94.4% while that of scrape cytology was found to be 97.2%.

Conclusion: FNAC and Scrape cytology have an advantage of being simple, quick, safe and accurate methods for the preoperative and immediate postoperative diagnosis of patients operated in surgical camps done at rural hospitals in remote areas of our country.

Keywords: Cytology, Rural Hospital, Surgical Camp

Introduction

Cytology is a simple and useful modality used commonly to know the nature of the lesion both pre and intra operatively. It plays an important role when used in surgical camps in tribal areas, where the patients are inadvertently lost to follow up and it becomes difficult for operating surgeons to plan the course of action.[1,2] FNA (Fine needle aspiration cytology) and scrape cytology being simple, readily available, time saving, minimally invasive and cost-effective with high sensitivity and specificity have been used routinely to diagnose various lesions.[2,3] They are an accurate diagnostic tool and can be

made available even in small hospitals and semi urban hospitals during surgical camps, with the help of a pathologist. It helps in the planning and treatment of various lesions. Scrape cytology is an alternative simple procedure for frozen section or Tru-cut needle biopsy.[4]

Aim

The present study was undertaken to evaluate the usefulness of cytology in a surgical camp held in a rural hospital serving the tribal's of Maharashtra**.**

Material and Methods

The study was conducted in a rural hospital in Maharashtra and included 40 tribal patients posted for surgery. Detailed clinical history and significant findings were noted. FNAC was performed a day before the surgery. The FNAC procedure was explained and the patients' informed consent was taken. FNAC was done in 36 cases using 20cc disposable syringe and 22 gauge needle taking all aseptic precautions. Smears were fixed in absolute alcohol &stained with rapid PAP and rapid Hematoxylin and Eosin stain. Aspirations were taken from various sites which included breast, thyroid, soft tissue, salivary glands, lymph node and miscellaneous sites. A cytological diagnosis was made on the aspirated material. Scrapes from excision biopsies and specimens were taken in 38 cases and fixed in absolute alcohol and stained with rapid PAP and rapid Hematoxylin and Eosin stain. In 3 cases only FNAC was done- ovarian cyst, neck swelling and a parotid tumour. In 4 cases due to the site of the lesion- endometrium, ovary, testis and penis-only scrape cytology was done. A cytological diagnosis was given. Excision biopsies and specimens received were fixed in 10% buffered formalin and processed for histopathological examination later on at the institute. Sections were stained with Hematoxylin and Eosin. Cytological and histopathological correlation was done in all the cases.

Results

Table 1: Sites of the various lesions

Sr. No.	Site	No. of cases	%
1	Breast	11	27.5
2	Thyroid gland	9	22.5
3	Soft tissue	7	17.5
4	Salivary gland	4	10
5	Lymph Node	2	5
6	Miscellaneous		
	6.a) Ovary	2	5
	6.b) Endometrium	1	2.5
	6.c) Testis	1	2.5
	6.d) Penis	1	2.5
	6.e) Foot	1	2.5
	6. f) Neck	1	2.5
	Total	**40**	**100**

Table 2: Cytological and Histopathological correlation of the lesions

Sr. No.	Site	Clinical diagnosis	No. of cases	Cytology diagnosis	Histopathological diagnosis
1.	**Breast**	Fibroadenoma	4 F,S	Fibroadenoma	Fibroadenoma
		Fibroadenosis	1 F,S	Proliferative breast disease	Fibrocystic disease with duct hyperplasia and atypia
		Carcinoma breast	1 F,S	Phyllodes tumor	Phyllodes tumor
		Carcinoma breast	1 F,S	Lymphangioma	Lymphangioma circumscriptum
		Carcinoma breast	3 F,S	Ductal Malignancy	Infiltrating duct carcinoma
		? Sarcoma breast	1 F,S	Chondrosarcoma	Chondrosarcoma
2.	**Thyroid gland**	Multinodular Goitre	8 F,S	Multinodular Goitre	Multinodular Goitre
		Multinodular Goitre	1 F,S	Carcinoma thyroid	Papillary carcinoma thyroid
3.	**Soft tissue**	Dermatofibroma-shoulder	1 F,S	Low grade spindle cell tumor	Dermatofibrosarcoma protuberans
		Neurofibroma – back	1 F,S	Benign spindle cell tumor	Schwannoma
		? Squamous cell Carcinoma – abdominal wall mass	1 F,S	Low grade spindle cell tumor	Dermatofibrosarcoma protuberans
		Fibroma foot	1 F,S	Benign spindle cell lesion	Acral fibromyxoma
		Lipoma back	1 F,S	Keratinous cyst	Keratinous cyst
		Cystic lesion knee	1 F,S	Lymphangioma	Lymphangioma
		Leg tumor	1 F,S	Chronic inflammation with giant cells	Xanthogranulomatous inflammation

4.	**Salivary Gland**	Parotid tumor	2 F,S	a) Pleomorphic adenoma b)Lymphoepithelial Carcinoma	a)Pleomorphic adenoma b)Mucoepidermoid Carcinoma
		Parotid tumor	1 F	Cystic lesion	Mucoepidermoid carcinoma
		Malignant parotid tumor	1 F,S	Pleomorphic Adenoma	Polymorphous low grade adenocarcinoma
5.	**Lymph Node**	Axillary Metastasis	1 F,S	Metastasis of Carcinoma breast	Metastasis of Carcinoma breast
		Tuberculosis	1 F,S	Chronic granulomatous inflammation suggestive of Tuberculosis	Tuberculosis
6.	**Misc.**	Squamous cell Carcinoma, Foot	1 F,S	Melanoma	Melanoma
		Carcinoma penis	1 S	Squamous cell Carcinoma	Squamous cell Carcinoma
		Endometrial Carcinoma	1 S	Endometrial Carcinoma	Endometrial Carcinoma
		Carcinoma ovary	1 S	Serous adenocarcinoma	High grade Serous adenocarcinoma
		Teratoma Testis	1S	Seminoma	Seminoma
		Chocolate cyst, ovary	1 F	Cystic lesion with blood	Chocolate cyst, ovary
		? Thyroid swelling	1 F	Many Lymphocytes No thyroid follicular cells	Reactive hyperplasia, lymph node

F= Fine needle aspiration cytology

S= Scrape cytology

Table 3: Diagnostic accuracy of FNAC and scrape cytology

Sr No.	Test	Total cases	False Negative	Diagnostic accuracy
1.	FNAC	36	2	94.4%
2.	SCRAPE CYTOLOGY	37	1	97.2%

Discussion

The present study was carried out during a surgical camp held at a rural hospital in the interiors of Maharashtra, with no cytology and histopathological facilities available routinely. The patients were selected by doctors working at the hospital, by personally visiting nearby villages and finding cases that required surgery. The pre operative investigations, surgeries and post operative care was given free of cost to all the surgical patients through funds received by a social organization. Two Pathologists accompanied the team of Surgeons and Anesthetists for the camp.

The material required for cytological diagnosis was carried to the camp with an aim to help the surgeons in pre/intraoperative diagnosis and treatment. Formalin was taken to preserve the specimens for histopathology and transported back to the Institute for further processing. The present study included 40 cases of all age groups. Majority of the patients were females with male to female ratio of 1:2. The age of patients ranged from 14 to 70 years. Mean age was 45.4 years. Tumors ranged in size from 0.8cm to 11cm. Out of the 40 cases evaluated, 26 (65%) were benign or inflammatory lesions and 14 (35%) were malignant on histopathology.

From our results above it can be seen that the cytological diagnosis was correct when compared to the final histopathology in 38 cases (95%). In 2 parotid tumors the cytological diagnosis was different - one was diagnosed on FNAC as a cystic lesion and later turned out to be a mucoepidermoid carcinoma, the other was diagnosed on both FNAC and scrape cytology as pleomorphic adenoma, but later on histopathology was a polymorphous low grade adenocarcinoma. Mucoepidermoid carcinoma of the parotid was also seen to give a false negative diagnosis in another study, where they found a low sensitivity of 73%f on non USG guided FNAC for malignant parotid gland lesions involving the deeper portion of the gland.[5]

.In 7 cases (17.5%), the preoperative cytological diagnosis on FNAC differed from the clinical diagnosis, and hence could correctly guide the surgeon on the nature of lesion. They were 2 clinically diagnosed breast carcinomas which were diagnosed as benign phyllodes tumor and lymphangioma on cytology, I multinodular goiter turned out to be carcinoma thyroid, 1 abdominal wall squamous cell carcinoma was diagnosed as low grade spindle cell tumor, 1 lipoma back was diagnosed as keratinous cyst, 1 leg tumor was diagnosed as an inflammatory mass, 1 thyroid swelling was diagnosed as a non thyroid lesion with lymphocytes. All these were supported by histopathological confirmation later. [Figures 1 and 2]

Scrape cytology was found to complement FNAC wherever done. In one case where only scrape cytology of testis was done, it changed the clinical diagnosis of Teratoma to Seminoma. This shows the utility of the simple scrape cytology procedure, provided the pathologist is available at such camps for interpretation. Our diagnostic accuracy of FNA and Scrape cytology correlated with other studies. [1,7,8] Thus it highlights that FNAC and Scrape Cytology can help to establish correct diagnosis. [6]

To avoid or minimize false negative results, various factors including regenerative changes, metaplasia and other changes should be taken into consideration while reporting.[7,8] In a tribal population, where it is difficult to convince patients to come to the hospital for surgery after travelling long distances, and when post operatively the patients are lost to follow up, scrape cytology and FNA which are rapid, cost-effective, highly accurate and feasible diagnostic tools, help to arrive at a diagnosis, so that clinicians can provide proper treatment to the patients.[7.8.9]

Conclusion

Fine needle aspiration cytology and scrape cytology have an advantage of being simple, quick, safe and accurate methods for diagnosis, before and immediately after

surgery, and hence is helpful to the surgeon to provide complete treatment to the patients who are lost to follow up. In a developing country like ours which cannot afford a fully fledged surgical pathology laboratory in the periphery, it is possible to give an opinion on the nature of tumor using these cytological methods.

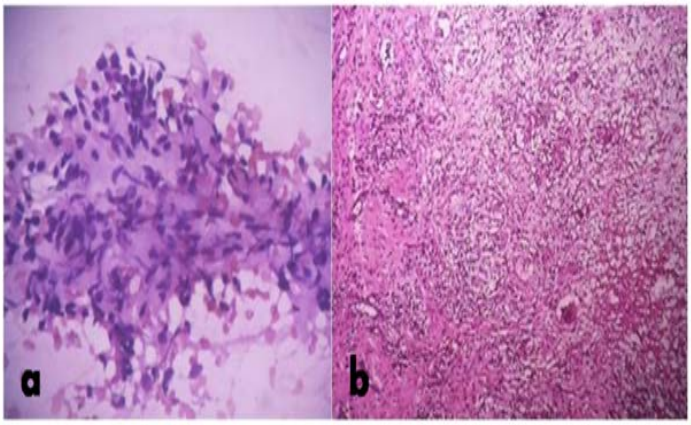

Figure1: Tuberculosis of lymph node

a] FNAC smear showing granuloma and

b] Histopathology showing granulomas.

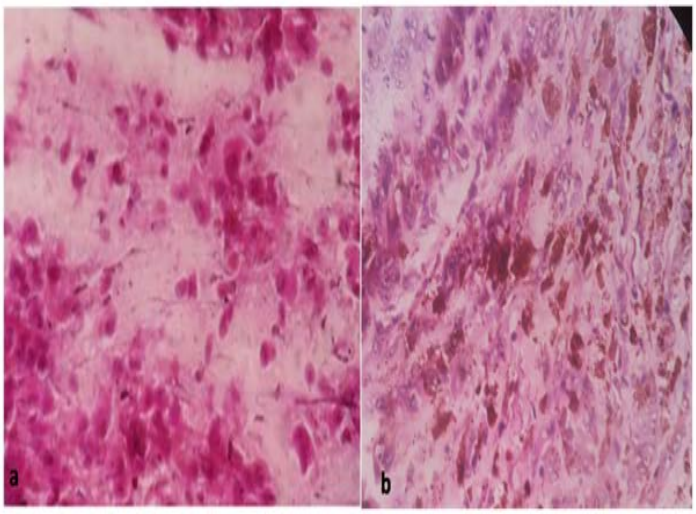

Figure 2: Melanoma leg

a] FNAC smear showing large pleomorphic cells with pigment in occasional cell

b] Histopathology showing tumour cells laden with melanin pigment.

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