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RESEARCH ARTICLE

FINE NEEDLE ASPIRATION CYTOLOGY OF THE HEAD AND NECK MASSES: ONE YEAR PROSPECTIVE STUDY.

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Abstract

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Introduction:-

Fine needle aspiration cytology is a technique for obtaining cells from a lesion for cytological examination and evaluation. Aspiration cytology was first reported by **Kun M** in 1847.²¹ **Martin H** introduced this technique in the evaluation of head and neck abnormalities in 1930. In India, fine needle aspiration cytology was first introduced during the early 1970's. FNAC is a procedure where by small amount of tissue or cells is aspirated from a pathological lesion with the help of fine 10 ml disposable syringe of 21, 22 or 24 gauge needle. FNAC is an inexpensive, safe and quick procedure and when performed by experienced worker is quite accurate.¹⁷

In the head and neck region, FNAC is of great value because of the multiplicity of accessible organs and heterogenous pathologies encountered.⁵ Swellings in head and neck region can arise from various structures like lymph node, salivary glands, thyroid, soft tissues, vessels, nerves and being easily accessible, the swellings can be aspirated without difficulty. The present study aimed at studying the spectrum of various lesions presenting in the head and neck region based on cytological findings. This study would assist the surgeons in identifying the common swellings presenting in the head and neck region, selection of the patient for surgery and palliative therapy and also help them in detecting the metastasis and staging of certain tumors.

Materials and method:

The study was conducted on 900 patients presenting with head and neck swellings over a period of one year (1st November, 2014 to 31st October, 2015) in the Cytology section of Postgraduate department of Pathology, GMC, Jammu. In each case, a brief clinical history and physical examination along with evaluation of relevant investigations was carried out. FNAC was performed by the cytopathologist using 20ml disposable syringe with 21-23gauge needle attached to the Cameco syringe pistol. One or two smears were fixed in 95% isopropyl alcohol or ethyl alcohol, stained with papanicolaou(PAP) and others were air dried, stained with May Grunwald Giemsa. Ziehl Neelsen (ZN) staining was performed wherever required. The cytomorphological features of various diseases were studied.

Observations:

The study included 900 cases among those age ranged from 11 days to 95 years in which 51.44% were males and 48.56% were females. Maximum incidences observed in the age group of 21-30 years. Table 1 depicts distribution of swellings according to organ of origin.

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Table I:-Distribution of Swellings According to Organ of Origin

Organ of origin	No. of cases	Percentage
Lymph node	441	49.00%
Salivary glands	67	7.45%
Thyroid gland	175	19.44%
Miscellaneous	217	24.11%
Total	900	100.00%

Miscellaneous group include swellings arising from skin, soft tissue, bone, blood vessels, neural tissue, congenital etc. in the region of head and neck.

In 95.67% cases the quality of aspirate was satisfactory (Figure 1 to 3)

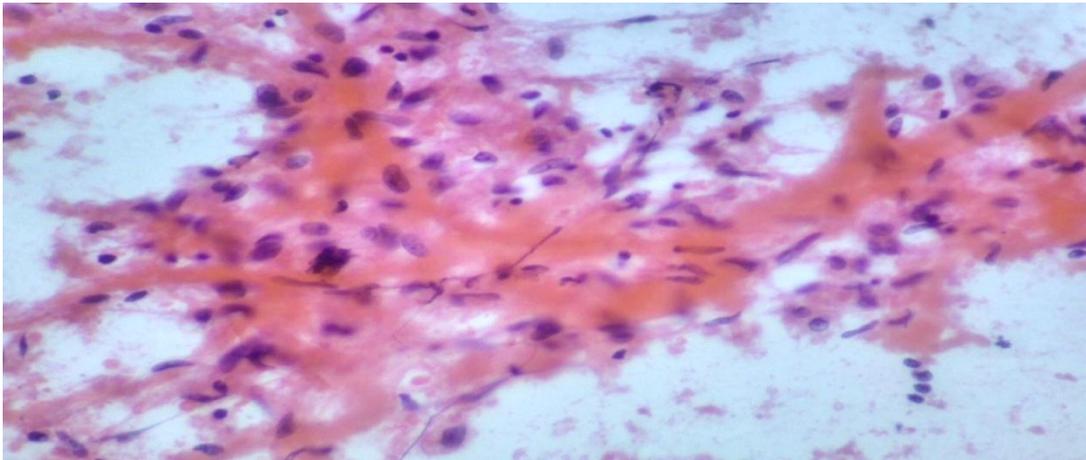


Fig.1:-FNA smear of Tubercular lymphadenitis depicting epithelioid cell granulomas (Pap X 400).

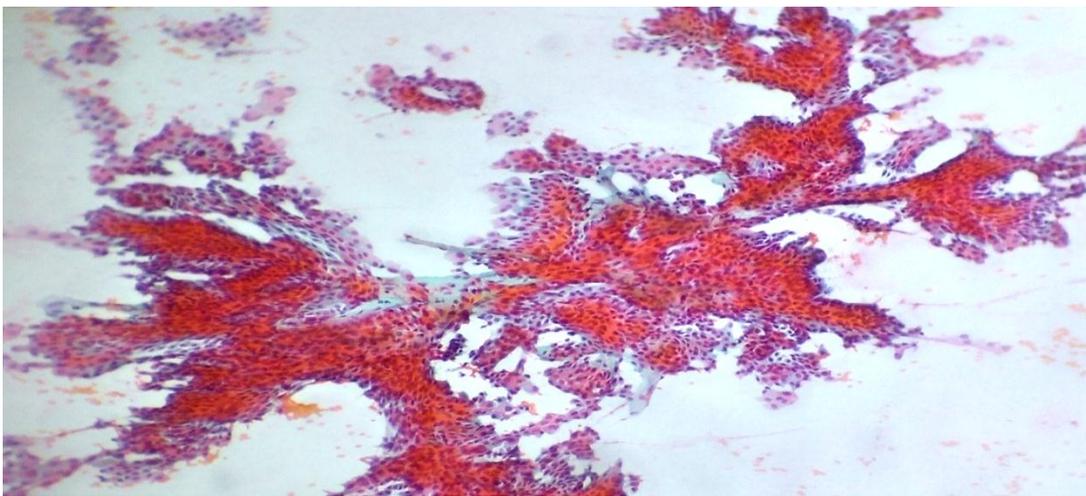


Fig.2:-Papillary Carcinoma Thyroid – Smear showing epithelial cells forming Papillaroid pattern (Pap X 100).



Fig.3:-Pleomorphic Adenoma – FNA smear depicting epithelial and stromal elements (MGG X 100).

In 39(4.33%) cases the aspirate was unsatisfactory and in all of them no definitive diagnostic opinion could be given. Also in 11(1.28%) cases inspite of satisfactory aspirate no definitive diagnosis was possible. So overall in the study in 850(94.44%) cases on FNAC, diagnostic opinion were given and in 50(5.56%) no diagnosis could be given. Table 2 depicts distribution of cases as per tissue involved and gender.

Table 2:-Gender Distribution as per organ of involvement:

Organ of origin	Males	Females	Total
Lymph nodes	260	181	441
Thyroid Gland	29	146	175
Salivary Glands	41	26	67
Miscellaneous	133	84	217
Total	463	437	900

Lymphnode involvement (49%) was the most common. Incidences of lymph node lesion is higher in males while that of thyroid lesion is higher in females. Out of 441 cases of lymphnode lesions, 191 (43.31%) were having non specific reactive lymphadenitis (Table 3).

Table 3:-Cytologic Diagnosis by FNAC in the lymph node group in the study.

Organ of origin	Diagnostic Group	Cytologic Diagnosis	No. of cases	Percentage
Lymph node	Inflammatory and non neoplastic	Reactive Lymphadenitis	191	43.31%
		Tubercular Lymphadenitis including Granulomatous Pathology	125	28.34%
		Acute suppurative lymphadenitis and Abscesses	30	6.80%
	Malignant Tumor	Metastatic Squamous Cell Carcinoma	34	7.71%
		Metastatic Adenocarcinoma	11	2.50%
		Metastatic poorly differentiated Carcinoma	21	4.76%
		Lymphoma	12	2.72%
		Metastatic Small Cell Carcinoma	02	0.45%
		Metastatic Medulloblastoma	01	0.23%
No Opinion	–	14	3.18%	
Total			441	100%

Out of 175 cases of thyroid lesions , 153 cases were inflammatory and non neoplastic , 13 cases neoplastic and no opinion was given in 9 cases(Table 4).

Table 4:-Cytologic Diagnosis by FNAC in Thyroid Gland Group in the study.

Organ of Origin	Diagnostic Group	Cytologic Diagnosis	No. of cases	Percentage
Thyroid Gland	Inflammatory and non neoplastic	Colloid Goiter*	93	53.14%
		Lymphocytic Thyroiditis	42	24.00%
		Adenomatous Goiter	16	9.14%
		Granulomatous Thyroiditis	02	1.14%
	Neoplastic lesions	Follicular Neoplasm	05	2.86%
		Papillary Carcinoma	07	4.00%
		Anaplastic Carcinoma	01	0.57%
No Opinion		09	5.14%	
Total			175	100.00%

* Including changes like cystic degeneration, hurthle cell change, hyperplastic change. Salivary gland lesions are depicted in Table 5.

Table 5:-Cytologic diagnosis by FNAC in Salivary Gland Group.

Organ of origin	Diagnostic Group	Cytologic Diagnosis	No. of cases	Percentage
Salivary Glands	Inflammatory and non neoplastic lesions	Sialadenitis	24	35.82%
		Sialadenosis	9	13.43%
		Retention cyst	1	1.49%
	Benign tumors	Pleomorphic Adenoma	24	35.82%
		Warthin's Tumor	02	2.99%
	Malignant tumors	Mucoepidermoid Carcinoma	02	2.99%
		Adenoid Cystic Carcinoma	02	2.99%
No Opinion		-	03	4.47%
Total			67	100%

In the miscellaneous group, most common diagnosis was Epidermal inclusion cyst in 72(33.18%) cases followed by Lipoma in 49 (22.58%) cases.

Discussion:-

Fine needle aspiration cytology (FNAC) offers clear advantages. It is minimally invasive, produces a speedy result and is inexpensive.²⁵In the head and neck region, FNAC is of great value because of the multiplicity of accessible organs and heterogenous pathologies encountered. An early differentiation of benign from malignant pathology greatly influences the planned treatment.⁵The differential diagnosis of a head and neck swelling covers a broad spectrum of diseases with differing implications for management. The present study was conducted to evaluate the role of FNAC in diagnosing various head and neck lesions. In the present study swellings arising from the head and neck were divided into those arising from lymph nodes, thyroid gland, salivary glands and miscellaneous.

A total of 900 aspirations were performed in patients presenting with head and neck masses. During our experience, we were able to secure adequate tissue by aspiration in about 861(95.67%) cases. Similar findings have been reported by various authors in literature.^{10,11,16,30}The cytodiagnostic yield was 94.44% in our study and in 5.56% of aspirates no diagnosis could be given as the material was unsatisfactory or non representative of the lesion. Such a high comparable diagnostic yield has also been reported by various authors in literature.^{1,26,27,29}

In the lymph node group, the most common diagnosis was reactive hyperplasia in 43.31% cases followed by tubercular lymphadenitis in 28.34% cases. Similar findings were reported in literature.^{4,10,17,34} In the thyroid gland group, females predominated the study with a F:M=5.03:1. Similar female predominance has been reported by various authors in literature.^{5,10,13,15,17,34} Most common diagnosis was colloid goiter and its variants in 62.28% followed by lymphocytic thyroiditis in 24% cases. Similar observations have been reported by various authors.^{5,10,13,15,17,34} Papillary Carcinoma was the most common pathology in neoplastic group similar to that reported by various authors.^{10,33}

In salivary gland group, Parotid gland was most frequently involved. The most common pathology encountered was Sialadenitis (35.82%) in non neoplastic category and pleomorphic adenoma(35.82%) in neoplastic category. Similar observations are reported in literature.^{3,5,6,20}

In the present study, lesions from miscellaneous tissue origin formed the second largest group. The most common diagnosis encountered was epidermal inclusion cyst, in non neoplastic group. Various authors have reported similar findings in their studies.^{16,33,34} In the neoplastic group, lipoma was the most common diagnosis as also seen in studies conducted by Chauhan et al and Solanki et al.^{5,33}

Conclusion:-

FNAC provides a reliable, cost effective, convenient, easily accessible, non traumatic and highly accurate method for initial workup and management of swellings of head and neck region. The procedure is safe and free from complications and is well tolerated by the patients.

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