



ROLE OF FNAC IN DIAGNOSIS OF NON-THYROIDAL HEAD AND NECK LESIONS: A 2 YEAR RETROSPECTIVE STUDY

Pathology

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ABSTRACT

Background: Fine needle aspiration cytology (FNAC) is of particular relevance in head and neck lesions because of easy accessibility, excellent patient compliance, minimally invasive nature of procedure and helping to avoid surgery in non-neoplastic lesions, inflammatory conditions and also some tumors. **Aims:** To study the cytomorphological features of non-thyroidal head and neck lesions and to correlate FNAC results with HPE where biopsy is available. **Observations:** The study was conducted on 52 patients presenting with non-thyroidal head and neck swellings. Swellings arising from lymphnode forms largest group 34 (65.3%), salivary gland origin lesion comprised of 4(7.7%) cases and miscellaneous lesions comprised of 14 (27%) cases. In 16 patients surgical intervention and histopathological examination of specimen was undertaken. The sensitivity of FNAC then compared to HPE where available in diagnosing lymphnode lesion was 77.77%, salivary gland lesion was 100% and miscellaneous swellings was 100%. The overall sensitivity in the study in diagnosing non-thyroidal head and neck lesion was 87.5%. No major complication was recorded. **Conclusion:** FNAC is considered to be the most reliable technique in early diagnosis of various head and neck lesions so that proper intervention could be taken at earliest possible time in early stages and should be considered as first line investigation in the evaluation of lesions in head and neck region.

KEYWORDS

Fine needle aspiration cytology, Non-thyroidal, Head and Neck lesions, Salivary Glands

INTRODUCTION

Fine needle aspiration cytology (FNAC) is a simple, rapid and economical method to sample superficial swellings found in the head and neck region¹. Lesions of head and neck are comprised of developmental, inflammatory and neoplastic conditions. Most common seen swellings are brachial cysts, thyroglossal cysts, dermoid cysts, lymphangioma, hemangioma, lymphadenitis, sialadenitis and neoplastic pathologies². FNAC is of particular relevance in the head and neck area because of easy accessibility of target site, excellent patient compliance, minimally invasive nature of procedure and helping to avoid surgery in non neoplastic lesions, inflammatory conditions and also some tumors³. Fine needle aspiration technique was first introduced by Martin & Ellis (1930) in diagnosis of various organs lesions⁴. The FNAC has accuracy rate exceeding 92%⁵. The role FNAC in the diagnosis of metastatic disease is well established and the procedure not only confirms the diagnosis but also give clues regarding the nature of primary tumor⁶. Tubercular lymphadenitis being common in head and neck area can b diagnosed with sensitivity ranging from 70-90%⁵. It is useful in the diagnosis of salivary gland tumors where it can differentiate between a malignant and a benign tumor with over 90% accuracy⁵. Moreover, FNAC has also been reported to be most accurate at diagnosing epithelial cysts⁷.

Limitation of fine needle aspiration is related to 1. Skill of the aspirator 2. The expertise of the cytopathologists and 3.The difficulty in distinguishing benign from malignant counterparts⁸

MATERIAL & METHOD

The study was conducted on 52 patients presenting with nonthyroidal head and neck swellings referred to the Postgraduate Department of Pathology at Acharya Shri Chandra College of Medical Sciences and Hospital, Sidhra, Jammu during a period of 2 years retrospectively. All the patients included in the study were subjected to relevant history, history regarding the swelling, general physical examination, systemic examination, local examination of the swelling and routine and other relevant hematological investigations. All the cases were subjected to FNAC performed by cytopathologist.

The procedure was explained to the patient and attendants. Written informed consent was obtained. Aspiration was carried out using 20ml disposable syringe with 23-25 guage needle attached to Franzen's aspiration handle. One or two wet smears were fixed in 95% ethyl alcohol and others were air dried and routinely stained by Papanicolaou (PAP) / Haematoxylin and Eosin (H&E) and May Grundwald Giemsa (MGG) stain respectively. Special stains like Ziehl

Neelson (ZN) stain for acid fast bacilli (AFB) and Periodic Acid Schiff (PAS) was done wherever required. The stained smears were examined and findings of FNAC were recorded. In 16 patients who underwent biopsy or surgical intervention either under local anesthesia or general anesthesia, the surgical specimen obtained was fixed in 10% neutral formalin and subjected to gross examination, processing, paraffin embedding, section cutting, staining by haematoxylin and eosin and mounting by DPX. The stained sections were examined and cytomorphological features of various diseases were studied.

RESULT

The age range of the patients varied between 5 months to 84 years with male to female ratio of 2.5:1. The swellings arising from lymphnodes forms the largest group 34(65.3%), salivary gland origin regions comprised of 4(7.7%) and miscellaneous group i.e. arising from blood vessels, skin, soft tissue, neural tissue etc comprised of 14 (27%) cases as shown in table 1.

In 50 cases (96.2%), the quality of aspirate was satisfactory. In 2 (3.8%) cases quality of aspirate was unsatisfactory and in them no diagnostic opinion could be given. In 16 patients HPE was undertaken which included 9 cases of lymphnodes, 3 cases of salivary gland and 4 miscellaneous cases and in them comparison between FNAC and HPE was made as shown in table 2

After FNAC and HPE the final diagnosis in lymphnode swelling was reactive 17 cases, tubercular 5, acute lymphadenitis 2, malignancy 10 cases, thus overall sensitivity of 77.77%. In salivary gland swelling the final diagnosis was Sialadenitis 1, benign 3 no malignant case was seen thus FNAC diagnosis was concordant with HPE in all the cases thus giving sensitivity of 100%. Among miscellaneous group 4 cases were epidermal inclusion cysts, 1 thyroglossal cyst, 1 hematoma, 1 mucinous cyst, 4 cases of lipoma and 1 basal cell carcinoma thus in all the 14 cases the diagnosis on FNAC and HPE was concordant with sensitivity of 100%.

There was no major complication of FNAC in study except an area of ecchymosis and some tenderness at the aspiration site in few cases.

Table 1: Diagnosis by FNAC in the study

Organ of Origin	Diagnostic group	Cytologic diagnosis	No.	% age
Lymphnode	Inflammatory & Non neoplastic	Reactive lymphadenitis	17	3.2%

	Malignant Tumor	Tubercular lymphadenitis	6	11.6%
		Acute lymphadenitis	1	1.9%
		Lymphoma	3	5.8%
		Metastatic squamous cell carcinoma	1	1.9%
		Undifferentiated carcinoma	1	1.9%
		Metastatic melanoma	1	1.9%
		Mets. Adenocarcinoma	1	1.9%
		No opinion	1	1.9%
Salivary gland	Inflammatory & non neoplastic	Sialadenitis	1	1.9%
	Benign tumor	Pleomorphic adenoma	2	3.9%
		Warthin's tumor	1	1.9%
	Malignant tumor	-	-	-
Miscellaneous	No opinion	-	-	-
	Inflammatory and non neoplastic	Epidermal inclusion cysts	4	7.7%
		Thyroglossal cyst	1	1.9%
		Hematoma + mucinous cysts	3+1	7.7%
	Benign tumor	Lipoma	4	7.7%
Total	Malignant tumor	Basal cell carcinoma	1	1.9%
	-	-	52	100.00%

Table 2: Comparison of FNAC diagnosis VS. histopathological diagnosis

Origion	Diagnostic group	Diagnosis	FNAC diagnosis	HPE Diagnosis
Lymphnode	Inflammatory & non neoplastic	Abscess (pyogenic)	1	2
		Abscess (tubercular)	2	1
	Malignant tumor	Lymphoma	3	3
		Mets. Adenocarcinoma	1	3
Salivary gland	Benign	Pleomorphic adenoma	2	2
		Warthin's tumor	1	1
	Malignant	-	-	-
		-	-	-
Miscellaneous	Inflammatory & neoplastic	Epidermal inclusion cyst	1	1
		Thyroglossal cyst	1	1
		-	-	-
	Benign	Lipoma	1	1
	Malignant	Basal cell carcinoma	1	1
Total	-	-	14	16

DISCUSSION

The differential diagnosis of a head and neck swelling covers a broad spectrum of disease with differing implications for management. The gold standard for diagnosing head and neck swellings is open biopsy (incisional/excisional) and HPE of the specimen with inherent risk of surgical and anesthetic complications particularly local recurrence in malignant lesions⁷. In the present study the aspirate was satisfactory in 96.2% cases and unsatisfactory in 3.8% cases and unsatisfactory aspirate was mostly from lymphnode swelling, similar finding was reported by Schwartz et. al¹⁰ where 90.6% aspirate was satisfactory and 9.4% were unsatisfactory and Fulciniti et. al¹¹ where 94.5% were satisfactory and 5.5% were unsatisfactory.

In our study swellings from lymphnodes forms the largest group (65.3%), followed by salivary gland (7.7%) and miscellaneous group (27%) which is same as reported in study by Samiullah et. al¹² where lymphnodes constitutes 62.6%, salivary gland 11.9% and miscellaneous group forms 11.19% cases.

In our study 16 patients underwent surgical intervention and HPE. There was 2 patient where lymphnode size was less than 1 cm and aspirate was non- representative for cytodiagnosis and HPE after biopsy revealed metastatic adenocarcinoma. There were 3 cases with lymphadenitis

leading to abscess formation, 1 was diagnosed as pyogenic and 2 were diagnosed as tubercular on FNAC. But after HPE of the granulation tissue in 1 case tuberculosis was ruled out i.e false positive. Chaturvedi et. al¹³ as also found diagnostic difficulties on aspirations of lymphnodes with superadded infection. The sensitivity is present study for diagnosis of lymphnode lesion is –77.77%.

In present study, salivary gland swelling comprises of 4 cases. In 3(75%) cases parotid gland was site and in 1(25%) case submandibular gland was the site. Similar observation was made by Kandekar et al¹⁴ and Tavaid DS¹⁵ where parotid gland was involvement was seen in 52.7% and 80% cases. No malignant tumor was reported in our study. In benign tumor, Pleomorphic adenoma was the most common (75%), followed by warthin's tumor this is in concordance with study made by Tavaid DS et al¹⁵ where pleomorphic adenoma was seen in 80% cases.

In all 4 cases FNAC and HPE comparison was concordant giving sensitivity of 100% comparable to other studies In miscellaneous lesions both FNAC and HPE diagnosis were concordant thus giving the sensitivity of 100%. The overall sensitivity of FNAC in diagnosis of non thyroidal head and neck lesion where both FNAC and HPE was done, was also calculated i.e 87.5%, such high sensitivity has also been reported by Fulciniti et al.¹¹ where sensitivity was 86.4%.

CONCLUSION

FNAC is considered to be the most reliable technique in early diagnosis of various head and neck lesions so that proper intervention could be taken at earliest possible time in early stages and should be considered as first line investigation in the evaluation of lesions in head and neck region. The procedure is cost effective, free from complications and well tolerated. It has high degree of diagnostic yield and sensitivity to diagnose lymphnode lesion thereby obviating the need for open biopsy and in salivary gland swelling and benign tumor or cystic lesion of head and neck area to plan the surgery preoperatively.

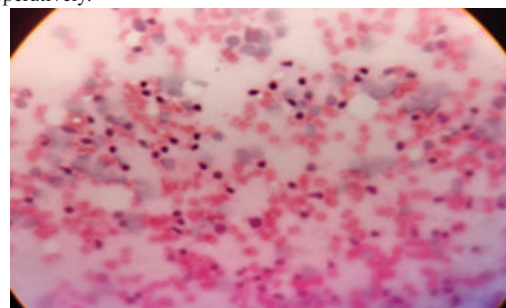


Figure 1- Reactive Hyperplasia Of Lymphnode Showing Polymorphic Cell Population (MGG X 400).

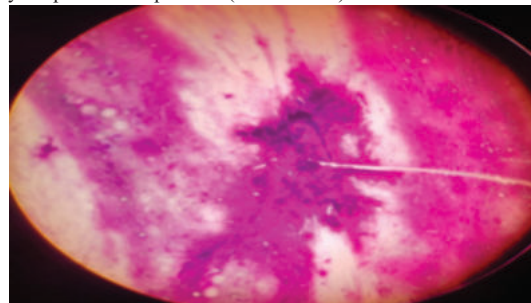


Figure 2 – Section Showing Pleomorphic Adenoma With Myoepithelial Cells In Chondromyxoid Stroma

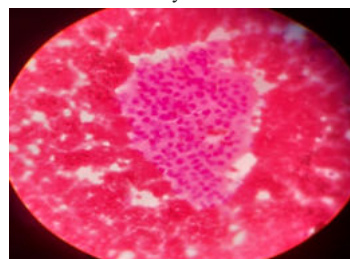


Figure 3 – Warthin's Tumor FNAC Smear Showing Oncocytic Cells (400X).

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