Original Article

Significance of Preoperative FNA Diagnosis of Salivary Glands Swellings with Role of Cell Block

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ABSTRACT

Objective: Cytomorphological evaluation of salivary gland swelling for preoperative provisional diagnosis with help of cell block

Study Design: Cross-sectional study

Place and Duration of Study: This study was conducted at the Pathology department BMSI,,JPMC, Karachi from 1st august 2020 to 30th June 2022

Materials and Methods: Total 94 cases of salivary gland swellings included in study. patients with swellings of salivary gland and submandibular glans of either side were aspirated in FNA OPD of Pathology department BMSI, JPMC.

Results: Pleomorphic adenoma was commonest diagnosis of parotid glands swellings (29), cystic lesions were 15 cases mostly diagnosed in submandibular gland swelling. The cases diagnosed as abscess were 15 and 07 as necrotizing inflammation. 04 cases of neoplastic lesions were epidermoid carcinoma, 02 squamous cell carcinoma and 02 were adenoid cystic carcinoma 02 cases as benign lesions. 05 cases were diagnosed as chronic sialadenitis. The age group of patients were15 to 17 years in female, and 13 to72 years among male.

Conclusion: Pleomorphic adenoma was common finding along with few cases of neoplastic lesions and other inflammatory lesions

Key Words: FNA OPD, fine needle aspiration outpatient department

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INTRODUCTION

Fine needle aspiration cytology is safe, easy cost effective, non-invasive reliable procedure for discrete swellings of salivary gland and helpful for pre-operative provisional diagnosis either swelling is benign, malignant or inflammatory lesions. Since 1920s FNAC started simultaneously in Europe and USA as a diagnostic tool based on cytomorphological findings of scattered cells or groups obtained on aspiration .this procedure was further developed in 1950 and 1960s by the karolinska institute in stockholmalong with institute curie in paris and ultimately popular in 1970s,[1,2,3,7,14,15] salivary gland neoplasm accounts for 3 %of head and neck and 0.3 to 0.6% of all body tumors.[1-4]

70% of salivary gland tumors arises from parotid glands and remaining from submandibular salivary gland. 80 to 85% of salivary gland tumors are benign pleomorphic adenoma and mostly arising from parotid gland. mucoepidermoid is commonest malignant tumor, mostly arising from submandibular major salivary gland. Other types of tumors are adenoid cystic carcinoma and squamous cell carcinoma. In 2018 The Milan System for Reporting salivary gland cytopathology (MSRSGC) was introduced as organ Specific Classification system for Salivary gland .(MSRSGC) established SIX dliff rent diagnostic categories associated with risk of malignancy (ROM) based on cytomorphological pattern of Lesion-Categories of milan System includes. category 1: Non diagnostic (ND); category 2: Non neoplastic (NN): Category 3. Atypia of undetermined significance (Aus): category 4a: Neoplasms benign (NB) category 4b: Neoplasms salivary gland neoplasm of uncertain malignantpotential (SUMP). category 5: suspicious of malignancy (SM) and category. 6: Malignant (M) (130, 16). Cellblocks are Paraffin Section of cytology specimen and Comparable to the formalin-fixed Paraffin Embedded tissue of surgical pathology biopsies. on cell block section Immunohistochemistry and special stains can be performed for optimal results. Processing done with direct-cytology smear and preparation of cell block with aspirated maternal fixed in formalin embedding in Cassettes. Cell block can easily be prepared from aspirated material and is very important in provisional diagnosis of suspected cases to

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help the pathologist for final comments on lesions.[1,2,3,12-15].

MATERIALS AND METHODS

Total 94 cases of salivary gland swellings were included in study during two years in FNA OPD of Pathology Department BMSI, JPMC. Aspiration was performed with 10guage syringe, smear and cell block prepared from aspirated material

- Clinical history with radiological information recorded on request form
- Four slides prepared Direct smear and fix in alcohol
- Diff quick stain done and repeat aspirate perform in unsatisfactory material
- Cystic fluid centrifuged and processed
- Single cassette for cell block prepared and fixed in Buffered formalin
- Haematoxylin and eosin stained on all slides Methods of staining.Sections were processed in following solutions.Xylene 1 for 10 minutes.Xylene 2 for 10 minutes.Absolute alcohol for 5 minutes.95% of alcohol for 5 minutes.80% alcohol for 5 minutes.70% alcohol for 5 minutes.Rinsed in tap water for 2 minutes.Harris,'s haematoxylin for 5-10 minutes.Acid alcohol 1%,3-5 dips and then washed in tap water. Ammonia water 3-5 quick dips only and then rinsed in tap water for 10-15 minutes. Eosin for 2 minutes.70% alcohol, 5 quick dips.80% alcohol, 5 quick dips.95% alcohol, 5 quick dips. Absolute alcohol two changes 5 quick dips.Xylene two changes for 5 minutes each. Mount in DPX
- Special stain PAS (periodic acid Schiff) applied when required
- All the slides were studied under light microscope using scanner (4X10), low power (10X10), and high power field (40x40)
- Results of Haematoxylin and Eosin
- Nuclei .stained blue
- Cytoplasm, stained varying shades of pink
- Results pf PAS stain
- Glucagon and periodic reactive carbohyderates . Magenta,
  Nuclei. Blue (Bancroft and cook 1994).

RESULTS

Total 94 cases of salivary glands swellings were aspirated during study period. 29 cases were pleomorphic adenoma. 15 were cystic lesions including inflammatory cysts. And a single cyst with amyloid crystals.15 cases were diagnosed as abscess and 07 as necrotizing inflammation, were most common in submandibular salivary gland chronic inflammation, sialadenitis were 05 cases. 08 cases of neoplastic lesions including 04 epidermoid carcinoma, 02 cases of squamous cell carcinoma and 02 were adenoid cystic carcinoma and 02 cases of benign lesions. Male patients were between the age of 13 to 72 years and the female patient between the ages of 15 to 70 years right sided swellings were 39 and left were 49 salivary glands and other were submandibular glands.

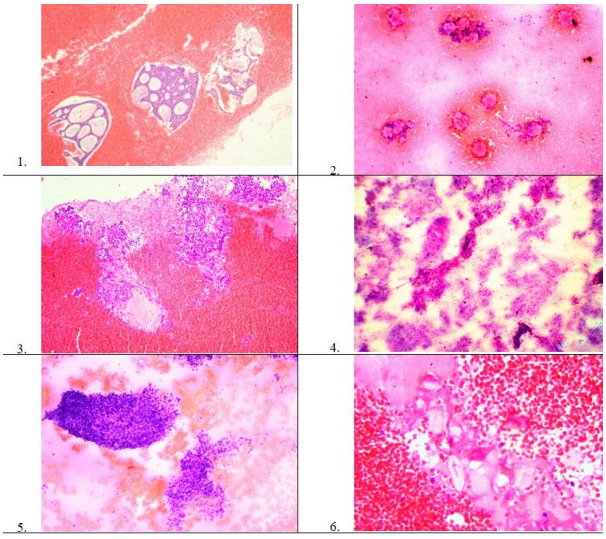

Figure No.1:
1. Cell block of adenoid cystic carcinoma
2. Smear of adenoid cystic carcinoma
3. Cell block of pleomorchic adenoma
4. Smear of pleomprphic adenoma
5. Neoplastic lesion cell block
6. Amylloid crystals

Table No.1: Laterality of Salivary Glands Swelling

1	Right Parotid Gland	39
2	Left Parotid Gland	49
3	Submandibular Glands	6
4	Total no of Cases	94

Table No.2: Age Group of Male & Female Patient

Age group	Number of cases (Female)	Number of cases (Male)
10-20	10	5
21-30	13	11
31-40	15	8
41-50	6	5
51-60	6	7
61-70	2	4
71-80	1	1
Total	**53**	**41**

Table No.3: Cytomorphological Patterns of Salivary Glands Swelling

1	Pleomorphic Carcinoma	29 (30.85%)
2	Cystic Lesions	15 (15.95%)
3	Abscess	15 (15.95%)
4	Chronic Granulomatous Inflammation (One Case of Salivary Gland)	08 (8.51%)
5	Necrotizing Inflammation	07 (7.44%)

6	Chronic Sial Adenits	05 (5.31%)
7	Mucoepidermoid Carcinoma	04 (4.25%)
8	Adenoid Cystic Carcinom	02 (2.12%)
9	Squamous Cell Carcinoma	02 (2.12%)
10	Beningn Lesion	02 (2.12%)
11	Amylloid Crystalloid In Cyst	01 (1.06%)
12	Inconclusive	04 (4.25%)
	Total No of Case	**94**

DISCUSSION

A total number of 94 cases were aspirated during study time in Pathology department BMSI, 49 was left sided parotid glands, 39 were right parotid swelling and 06 were submandibular glands .swellings .on ultrasound mostly labeled as neoplastic lesion or cystic lesions Male patients were between the age group of 13 to 76 years and female patient 15 to 65 years both predominantly in 3rd and 4th decades most of studies shows the same finding.[1,2,3] however the study of poudel A 2020 shows the different age group of salivary gland swelling. In our study female patients were predominant. 29 (30.85%) cases diagnosed as pleomorphic adenoma. on aspiration mixed material were obtained and smear shows groups of ductal and myoepithelial cells in myxoid back ground and confirmed on cell block with groups of ductal and myoepithelial cells in chondromyxoid back ground ,mostly the histopathological findings of pleomorphic adenoma seen same as on cell block.[3,5,8,9] Total number of 15(15.95%) cases were diagnosed as cystic lesions including 02 Inflammatory cyst, swellings were mostly single circumscribed and discrete clear to brownish fluid were aspirated ,material centrifuged and sediment used for smearing. smear shows mostly foamy histiocyts and lymphocyte in protienacous back ground, ductal element was not a prominent feature. cell Block was not prepared for these lesions and only the fluid was centrifuged, on ultrasound these lesions were were mostly labelled as benign lesions.with cystic changes.[5,6,9, 12, 13.,14] Two cases(2.12%) were diagnosed as neoplastic cystic lesion .aspirate showed mixed material smear exhibiting clusters and sheets of cells and hyaline globules. cell block shows definitive pattern of. Adenoid cystic carcinoma composed of cribriform pattern predominantly myoepithelial cells admixed with hyalinized, myxoid globules and scateres ductal element.[2,7,10,12,13,14,.] The 15(15.95%) cases of abscess were diagnosed mostly from submandibular glands and smear shows sheets of polymorphs and degenerated inflammatory nuclear material in myxoid and necrotic back ground. . cell block was not needed for confirmation of these cases and repeat FNAC was advised for further delineation if swelling persists after conservative treatment . 02(2.12%) cases were Labelled as benign lesion on ultrasound were aspirated and smear shows scattered benign groups of ductal cells and myoepithelial cells on smear. cell block exhibits groups of ductal and myoepithelial cells [1,2,5,9,10,] 02(2.12%) cases were diagnosed as squamous cell carcinoma, smear showed the groups of atypical squamous cells with abundant eosinophilic cytoplasm. Cell block shows groups of atypical cell with keratinized cytoplasm and abnormal mitosis. on ultrasound these cases also labelled as neoplastic lesions.[1,2,5..10,.] excisional biopsy advised for confirmation of FNA diagnosis. chronic sialadenitis diagnosed in 05(5.31%) cases, smear shows groups of benign looking ductal and myoepithelial cells with lymphocytic infiltrate in mostly proteinacious and hemorrhagic background .cell block was not needed for confirmation. Single case (1.06%) of parotid gland was diagnosed as chronic granulomatous inflammation. composed of mixed inflammatory infiltrate, clusters of epitheloid cells and few multinucleated giant cells in necrotic back ground. Cell block was not prepared because of definitive cytomoephological patern.[2] and 07 (7.44%)cases of submandibular glands shows chronic granulomatous and 07(7.44%)necrotizing inflammation with extensive necrotic back ground with same morphology of chronic granulomatous inflammation. due to extensive necrosis these cases were advised for microbiological evaluation to correlate the definitive type of pathology .[1,2,5].04(4025%) cases were diagnosed as epidermal inclusion cysts in submandibular glands. .on aspiration thick fluid were obtained and smear shows sheets of anucleated keratinous material and mature squamous cells . In inconclusive cases after thrice attempts smear shows mostly blood and scanty cellular element or only proteinicous material that was not suitable for final comments therefore excisional biopsy advised for further evaluation and future planning of treatment.

CONCLUSION

Pleomorphic adenoma is common finding of salivary gland swelling followed by cystic lesions and few neoplastic lesions. cell block was very helpful for final comments on neoplastic lesions.

Recommendation: Histopathological confirmation of fna diagnosed cases is advised

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Author's Contribution:

Concept & Design of Study:	Humera Shahzad
Drafting:	Noshaba Rahat
Data Analysis:	Farhana Zulfiqar, Noshaba Rahat
Revisiting Critically:	Humera Shahzad, Noshaba Rahat
Final Approval of version:	Humera Shahzad

Conflict of Interest: The study has no conflict of interest to declare by any author.

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